FEEDSTUFFS

The Weekly Newspaper for the Feed Industry

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PRESENTATION — The first public presentation of the new feed industry story, "Mightier Than Missiles," was made to Orville L. Freeman, secretary of agriculture, by W. E. Glennon (right), president, American Feed Manufacturers Assn., and Richard L. Kathe, AFMA director of public relations.

AFMA Releases Feed Industry Booklet at Chicago Conference

CHICAGO—"The strongest weapon in the U.S.' arsenal is practically unknown to the average American. Yet, it is an awesome spectacle to our

(Turn to AFMA, page 8)

7% Less Broiler Eggs In Incubators Oct. 1 Than Year Earlier

WASHINGTON—Yes, it looks like government statistics finally caught up with industry reports of recent drastic cutbacks in broiler chick placements.

While total broiler-type chick hatchings in September still remained above the same month a year ago by a relatively small margin of 3%, the

(Turn to BROILER EGGS, page 124)

Skeleton Turkey Orders Presented to Committee

By JOHN CIPPERLY
Feedstuffs Washington Correspondent

WASHINGTON—Moving promptly to exploit the current enthusiasm of the turkey industry for federal government controls, the California apostle of marketing orders and agreement Assistant Secretary for Stabilization James T. Ralph presented to the U.S. Department of Agriculture National Turkey Advisory Committee this week two skeleton recommendations from which the committee may develop turkey and turkey hatching egg marketing orders and agreements. These orders would be subject to approval by the Secretary of Agriculture and subsequent favorable approval by referenda by two groups of the turkey industry.

Favorable approval of such orders and agreements consists of a two-thirds favorable vote of those eligible to participate in a referendum, subject, however, to a modification of USDA judgment if the production tonnage in favor of adoption of such committee recommended order falls short of the numerical majority, but represents an overwhelming majority of the production tonnage involved.

The proposed marketing documents set forth general guide lines within which the turkey industry must formulate its proposals.

The industry committee has been given a USDA brain-washing on the desirability of such control techniques which are primarily designed to boost the return to farmers for tur-

(Turn to ORDERS, page 4)

• • •

Low Turkey Prices May Leave Feed Dealers Holding Bag—of Bills

DENVER, COLO.—Colorado's turkey growers are facing a "ruinous" year and, along with them, feed dealers may be left holding the bag of unpaid bills.

Donald T. Peterson of Peterson's Pilgrim Pride Turkey Ranch in Jefferson County said growers are receiving prices that run as much as 30% below those of 1960.

"Prices are worse than in 1937 and 1938 and, unless something happens, a lot of turkey growers are going to be practically broke when this season is over," he said.

As for feed dealers, he said one large feed store owner in his area recently told him that he is afraid he may be holding more than $100,-

(Turn to HOLDING BAG, page 125)

Purina to Acquire Ft. Halifax Packing, Poultry Companies

St. LOUIS, MO. — An agreement has been reached whereby the Ralston Purina Co. will acquire control of the Ft. Halifax Poultry Co., and the Ft. Halifax Packing Co., both of Waterville, Maine, it has been announced by Donald Danforth, Ralston Purina Co. board chairman.

It was also announced by A. J. O'Brien, Purina executive vice president, that Don Corbett, manager and one of the owners of the two Maine companies, will join the Ralston Purina Co., Nov. 1, as director of integrated operations.

The transaction between the two companies involves an exchange of stock. Details of the agreement will be consummated when audited records of the Ft. Halifax properties are completed and available, it was stated.

The Ft. Halifax properties are

(Turn to PURINA, page 125)

USDA Issues Draft Of Proposed Order

WASHINGTON—A draft of a proposed marketing order for turkeys was obtained this week by Feedstuffs from the U.S. Department of Agriculture. This draft, along with a proposed order for turkey hatching eggs which was not yet available at press time, was reviewed by the National Turkey Advisory Committee when it reconvened Oct. 19-20 in Washington.

The following reproduction of the proposed turkey marketing order in-

(Turn to DRAFT, page 121)

Possible Price Climb to Over 12c Cheers Industry at Broiler Parley

By ROBERT H. BROWN
Feedstuffs Special Correspondent

JACKSON, MISS. — Broiler men, arriving in Jackson for the national conference of the National Broiler Council, were heartened a bit by the news that prices may climb to over 12¢ lb. within the next few days.

Members, checking into the King Edwards Hotel, were a bit happier than they have been in several days, when prices reached as low as 9½ and 10¢. The conference was Oct. 18-19.

Prices throughout the broiler area strengthened to the extent that 11-12¢ was the most quoted price level.

For the most part the market's undertone was generally firm with

(Turn to CHEERS, page 125)

Says Additive Research Has Only 'Scratched Surface'

WEST POINT, NEB.—Despite fast-moving changes in the area of animal nutrition during recent years, researchers have only "scratched the surface" in developing new chemicals and materials which will affect livestock feeding patterns.

Dr. E. F. Frolik, dean of the University of Nebraska college of agriculture, made this statement to a

(Turn to ADDITIVE, page 125)

Receiver Named to Obtain Feed for 400,000 Chicks

CHATTANOOGA, TENN. — A receiver was appointed and instructed to obtain feed for 400,000 chicks when their owner filed a petition in bankruptcy in Chattanooga.

Simmons Milling Co., Chattanooga, listed the chicks as perishable assets. Walter Lusk, Chattanooga attorney, was appointed receiver, was placed under $25,000 bond and instructed to arrange for feeding the chicks until a trustee in bankruptcy is appointed.

(Turn to RECEIVER, page 125)

Cattle, Calves on Feed Up 8%

WASHINGTON—Number of cattle and calves on feed for market in the 26 major feeding states Oct. 1 was 8% higher than a year earlier, according to the U.S. Department of Agriculture. The Oct. 1, 1961 total was 5,551,000 head, compared to 5,-127,000 on that date in 1960.

Though this was 8% up from a year earlier, it was down seasonally from the 5,764,000 head on feed July 1 of this year. The number on feed declined 4% from July to Oct. 1 this year, compared with a 9% decline during the same period in 1960.

Cattle and calves which had been on feed less than three months accounted for most of the increase in number on feed over a year earlier, according to USDA.

North Central States Increase 14%

(Turn to CATTLE, page 125)

FEEDSTUFFS *Features This Week*

CENTENNIAL NUTRITION REPORTS—

This special issue of Feedstuffs salutes the achievements of the nation's land-grant colleges and universities in conjunction with their 100th anniversary and the first major event of a year-long centennial observance, the Centennial Nutrition Conference at Kansas City, Oct. 23-25. In this issue are comprehensive reports from eight land-grant institutions—cooperating in the presentation of the conference—which tell the feed industry what's going on in current animal nutrition research and what developments may be expected in the future. Arkansas, page 18; Colorado, page 26; Iowa, page 34; Kansas, page 42; Missouri, page 106; Nebraska, page 82; Oklahoma, page 90; Texas, page 98.

GRAIN ROLLING—Benefits of rolling as a method of grain processing are discussed in an article appearing on page 54.

USES RADIO SPOTS—An Illinois feed man finds that his personally recorded radio spot commercials are building sales. Page 110.

—REGULAR FEATURES—

Up or Down	24	Putting Research to Work	74
Joe Brooks	56	Worth Looking Into	78
Convention Calendar	70	Feed Markets in Detail	122

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The regional circulation of this issue is concentrated in the southwestern states

The First 100 Years

A MAJOR PORTION of this issue of Feedstuffs is devoted to reports of research activities of land-grant colleges and universities throughout the Midwest. In presenting these reports Feedstuffs takes particular pride in sharing the opportunity with the Midwest Feed Manufacturers Assn. to focus industry and college attention on the area of activity that most specifically brings the interests of these educational institutions on common ground with the feed industry.

Other teaching and research functions of these colleges, of course, are of vital importance to the industry, too, for much of the manpower of progressive feed companies has received its education at land-grant institutions. This includes the economists, the engineers, the business management graduates as well as the animal and poultry husbandry majors. The importance of these other areas of college education continues to grow as the demands of operating agri-business enterprises put a greater premium on both broader knowledge of food production and marketing and some more specific talents in fields which just a few years ago were beyond the sphere of feed industry activities.

THE PROGRESS of land-grant colleges in meeting the continually changing needs of the nation will be underscored many times during the centennial observance. However, it is appropriate, as the first major event of that observance gets under way next week at the Centennial Nutrition Conference, that a reference back to the "firsts" of this vast educational system be made.

The circumstances under which the system was established were aptly described recently by Eric A. Walker, president of Pennsylvania State University:

"By the middle of the last century, America was ready for progress. It had land, raw materials, capital, credit. It was bursting with enthusiasm and optimism, despite the thickening conflict that was to erupt in 1861. The value of science and technology as economic and social forces of great importance had been demonstrated on a small scale, and people were eager to have these forces widely applied to the improvment of the economy of the country.

"However, one ingredient of progress—a vitally necessary ingredient—was conspicuously missing—knowledge and trained manpower.

"The colleges and universities in America at that time were direct transplants of British institutions. The rigidly prescribed curriculum they offered was compiled largely of the 'classics' and the study of the ancient languages. In these institutions, it was possible to obtain a collegiate preparation for only four professions: Law, medicine, theology and teaching. Instruction in science—and especially laboratory science—was practically nonexistent.

"There were indications that this type of education did not even satisfy the requirements of stable, aristocratic Victorian England. It certainly did not satisfy the needs of a muscular young democracy restless to get on with the business of carving a civilization out of a wilderness."

AND SO THE MORRILL LAND-GRANT ACT came into being. President Lincoln signed the act which was designed to encourage the establishment of colleges "where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanical arts in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

How well the act achieved its objectives can be measured most explicitly in the abundance of American agricultural production. The efficiency obtained in producing that abundance, in terms of reduced manpower required to fill the nation's food needs to overflowing, in turn has contributed mightily to industrial strength as well.

THE AGRICULTURAL departments of the land-grant colleges certainly face some important challenges in the years ahead, particularly in attracting more and better qualified students to supply the needs of agribusiness. It is estimated that they now graduate only about one third of the number needed to fill the job potential, and that by 1970, if the current trend continues, they will be graduating enough to fill only one fifth of the positions that will require trained men.

The opportunity for making prospective agribusiness managers of the future more aware of the opportunities available through agricultural education could well be major objective of the centennial year. Adequate demonstration of what colleges are doing, and can do, in fulfilling their mission is a place to start in this effort. The Centennial Nutrition Conference is a solid contribution to telling the story of achievements, and it is hoped that this centennial issue of Feedstuffs can help to further stimulate the recognition that will lead to progress.

How's Business?

AN EVERY WEEK REVIEW OF FORMULA FEED BUSINESS VOLUME, INCLUDING PRICE, SUPPLY AND DEMAND TRENDS

There are a number of signs of improved business volume across the nation this week, but some feed manufacturers still say business is slow. Business ranged from "much better" in the Ohio Valley to "slow" in the Pacific Northwest. It was reported from the south central region overtime is becoming common as mills "push" to keep up with the orders.

Beef and dairy cattle feed demand is reported to be improving in many areas. Movement of cattle into feedlot and the end of the pasture season for dairy cattle are responsible for most of the volume gains, feed men say.

Prices are expected to be somewhat higher, reflecting higher ingredient prices.

The wholesale feedstuff price index went up 2.9 points this week to a level of 77.5. It stood at 72.5 a year ago. The feed-grain index advanced 0.6 point to 63.5 compared to 61.2 a year earlier.

The hog-corn ratio, based on Chicago prices, was 16.3 this week. It was 16.9 a week ago and 16.4 a year ago. (Major market roundup and feed ingredient quotations appear on pages 122 to 124.)

Northwest

Feed men in the Northwest say that business this week is about the same as last week or slightly improved. There has been a noticeable pickup in the demand for cattle feeds, and dairy feed demand is improving as turkey feed falls off.

The pickup in cattle feed demand is attributed to the movement of cattle from the range into feedlots of this area.

Hog feed continues to be a high volume item.

Feed price tags are expected to range from slightly higher to as much as $1.60 per ton higher.

Southwest

Formula feed business in the Southwest is feeling the effects of a greatly improved cattle feed business. Shipments of cattle feed have picked up noticeably in the past week. Mixers are operating on a full five-day schedule with some mills scheduling Saturday operations, and there are isolated reports of seven-day runs.

Hog feed sales are still heavy as end product prices are still favorable in this line.

The volume of turkey feeds is still being maintained at a fairly heavy rate as birds have been kept on feed. Some trade sources report the effects of keeping birds off the market have tended to improve the returns on those turkeys that are currently being marketed.

The increase in number of cattle on feed lends an encouraging tone towards a heavy volume of cattle feed during the ensuing months.

The poor returns on eggs and broilers are currently being felt in the slower demand for egg mash and broiler rations.

Price lists will be mostly higher with the advance in millfeeds and soybean meal accounting for the increase.

Northeast

Formula feed sales bulged in western New York as consumers stockpiled after letting their inventories run down while they were waiting to see what the harvests would bring.

But the increased turnover wasn't felt in the New England states where there was a letdown in poultry feed demand and some disappointment over dairy feed volume. The trade hopes that three consecutive "freeze-ups" will stimulate farm feeding. Prior to the cold snap, dairy cattle were "knee-deep in clover."

In the western New York area the dairy feed pattern continued to swing to mixed feeds. Egg mashes moved in good volume. But, turkey feed demand continued to slacken and broiler feeds were "no good."

Top quality eggs broke 3¢ a dozen in New York and lower grades dropped 3 to 4¢ in the New England area. Broiler prices in the Bay State firmed up 1¢ to 12 to 14¢ lb., with most of the sales at 13½¢.

Running time of formulated feed manufacturers in the western New York area averaged a "well packed 40 hours." In the New England states it ranged from 30 to a "slow" 40 hours.

Ohio Valley

There was a much better demand in the feed business this week.

Manufacturers were encouraged by the increase in tonnage and felt that the over-all demand for manufactured feeds was on the upgrade.

There was a marked improvement in demand for cattle and dairy feeds. Hog feed demand continued to be good.

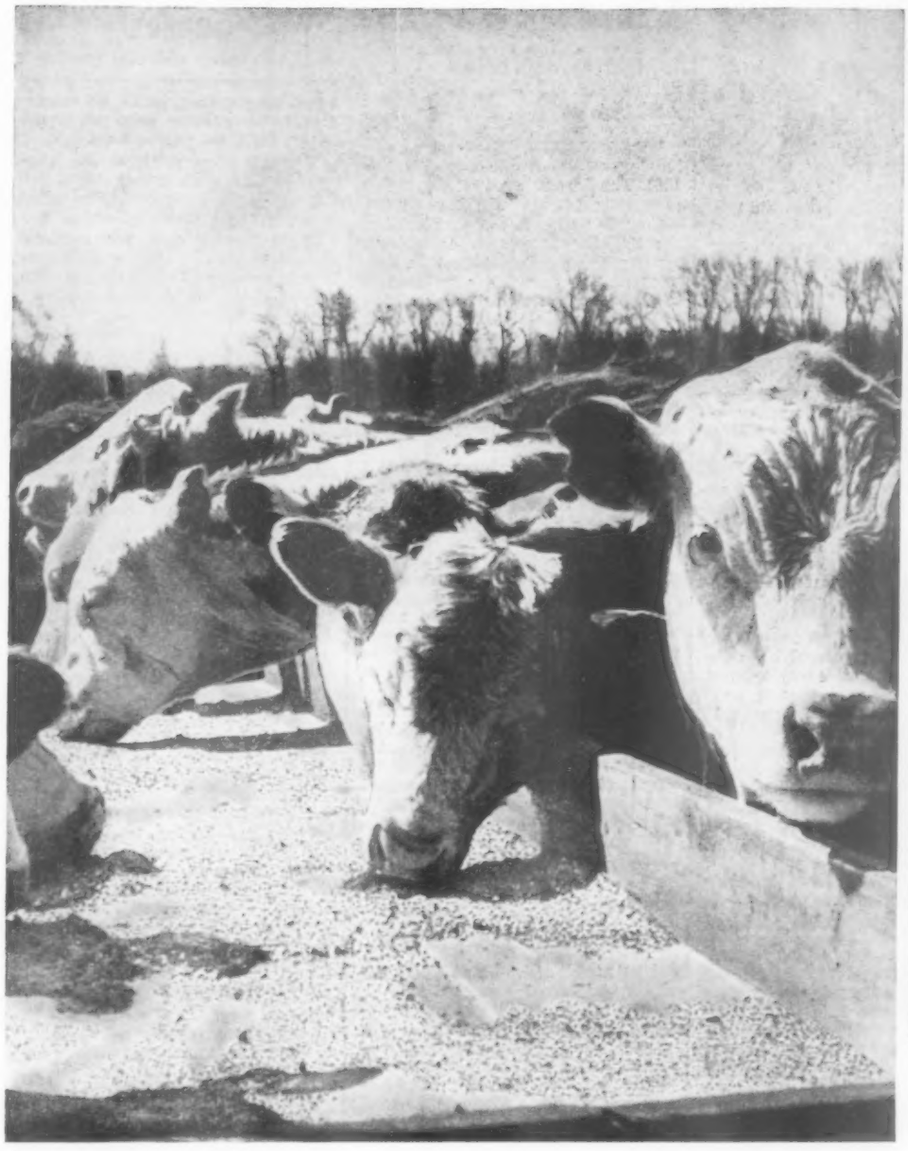
Prices for poultry and eggs in the retail markets remained steady with adequate supplies to meet the poor demand.

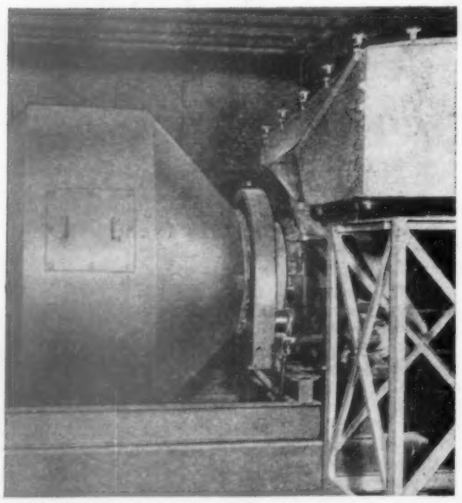
Central States

Commercial feed manufacturers in this area report that the current volume of sales is not too bad for the middle of October.

However, buyers are more or less "up in the air" in this period where normally attention is given to switching over from old to new crop in-

(Turn to MARKETS, page 127)





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'Grower Has Bloodshot Eyes'

Feed Men Say They Plan To Limit Turkey Financing

By GEORGE L. GATES
Editor of Feedstuffs

MINNEAPOLIS — "Boy, do your eyes look terrible," said a fellow to a friend who obviously had partied too long the night before.

"Well, if you think they look bad, you should see how they look from this side," replied the friend.

This quick story, no doubt told a time or two before, seemed, in the opinion of a turkey grower, to fit the circumstances of a certain fall day in 1961 (Friday, Oct. 13), when feed credit men and sales managers gathered in Minneapolis to discuss the year's turkey production binge and some possible hangover cures.

"The guy with the bloodshot eyes is the grower," Bernie Simonsen, Clam Falls, Wis., grower told the feed men attending a conference of the National Feeder Finance Credit Group.

The situation in which Mr. Simonsen and some fellow growers find themselves, along with feed companies who provide financing, of course, is no joking matter, and a number of feed men who spoke up at the meeting indicated that they definitely plan to put some limits on financing for the 1962 growing year.

Vote by Hand

On a show of hands, some 50 or 60% of those present indicated they favor a 20% cut in financing. (A 20% voluntary reduction in production has been set as a goal by turkey industry members in Minnesota, as reported in Feedstuffs Sept. 16.)

However, credit men and others at the meeting were very much aware that cutbacks in production might develop through federal marketing orders now under consideration, rather than through voluntary moves.

Present at the meeting to describe the possibility of such controls was Frank Blood, deputy director of the poultry division, Agricultural Marketing Service, U.S. Department of Agriculture. He substituted for Hermon I. Miller, director of the division, who was attending a meeting the same day in Washington of an industry committee named by USDA to consider control proposals (Feedstuffs, Oct. 14, page 1).

Citing USDA experience in milk marketing orders and orders for certain fruits and nuts, Mr. Blood noted that any turkey order which may evolve would be the first to embrace a commodity on a national basis. As an example of a possible way to exert controls he suggested that a marketing order on hatching eggs could be issued.

He said that there has been speculation on the part of some hatcheries in upping production against the possibility of quotas. However, Mr. Blood said, it is probable that no recent production records would be used for a base.

An effort would have to be made

(Turn to FINANCING, page 121)

GLF Completes 3rd Best Volume Year

SYRACUSE, N.Y. — Cooperative G.L.F. Exchange (GLF) has completed the third highest volume year in its history, members learned this week at the 41st GLF stockholders annual meeting.

Dollar volume included $176 million by the GLF Exchange, up from $171 million the year before; $118 million in retail stores and $30 million in retail petroleum services, each up $1 million.

GLF Exchange earnings were $5.3 million for the year ended June 30, also third high.

Federal income taxes took $1.6 million, another $1.4 million was paid in stock dividends, $2.1 million returned as patronage refunds and $200,000 margins retained in the business.

Pelleted Feed Demand

Demand for pelleted feeds has increased 203% in the past three years, Charles H. Riley, Jr., director of wholesale, reported to the annual meeting.

He also reported that bulk feed shipments have increased by 73% over the same three-year period.

Last year, he said, wholesale GLF divisions processed nearly four million pounds of seed, 1.3 million tons of feed, 228,000 tons of fertilizer, 617,000 tons of lime and $4.2 million worth of chemicals.

Director of marketing, Ronald N. Goddard, announced GLF had marketed $20 million worth of products during the year. Overall volume increased 2.2% over the previous year. Dry beans, flour, small animal foods and poultry meat were up, and eggs showed a decrease, he reported.

GLF's president, J. C. Corwith, told some 2,500 members that the cooperative's board of directors is continuing a policy of exploring possibilities of helping farmers market their crops.

"Many groups are coming to GLF for help and advice on marketing," Mr. Corwith said. "Although GLF doesn't have manpower to make all the studies requested, preliminary guidance is offered in a set of marketing principles developed by GLF management and outlining the basic steps to marketing success."

Mr. Corwith listed major appropriations by the board of directors during the past year, including $800,000 to enlarge feed pelleting facilities at a mill in Buffalo and $395,000 to double feed pellet equipment in the GLF mill at Bordentown, N.J.

George Dietz Named By Continental Grain

NEW YORK—George J. Dietz, director of the European office of the Farm Bureau Trade Development Corp., Rotterdam, Netherlands, has been named by Michel Fribourg, president of Continental Grain Co., as director of market development. Mr. Dietz will work toward expanding both domestic and export markets of Continental Grain. He joined the company at its New York executive offices.

Mr. Dietz, 38, has also served as director of international affairs in the American Farm Bureau Federation's Washington, D.C., office since joining the staff in late 1955. Prior to that he had seven years of foreign service with the U.S. State Department.

He entered the diplomatic service as assistant agricultural attache in 1948, and served three years in Argentina. He was then assigned to the U.S. Department of Agriculture's Foreign Agricultural Service for a year and a half. He held positions of agricultural attache in American embassies in Oslo, Norway, and The Hague, Netherlands, and, in addition to his duties as agricultural attache, was food and agriculture officer for the U.S. Foreign Operations Administration.

A graduate of Principia College, Elsah, Ill., he also holds a bachelor of foreign trade degree from the American Institute for Foreign Trade, Phoenix, Ariz.

September Poult Hatch 6% Under Year-Earlier Mark

WASHINGTON — Total poult hatchings have recorded a first for 1961. The September, 1961, hatch for poults of all breeds was less—by 6% —than in September a year earlier, the U.S. Department of Agriculture reports. Despite this cutback in September, the cumulative production of poults by commercial hatcheries in 1961 remained 23% above the same nine months in 1960.

A 45% reduction in light breed poult hatchings accounted for the all-breed decrease in September. Heavy breed hatchings in September amounted to a 17% increase over a year earlier.

Turkey eggs in incubators Oct. 1 indicate that the hatch of poults of all breeds also will be lower in October of this year than in October of last year.

Heavy white breed poult production in September, 1961, amounted to 1,011,000—10% larger than in September, 1960. The hatch of other heavy breeds (mostly bronze) of 173,000 was 82% larger than the relatively small hatch of 95,000 in September, 1960.

Since the first of the year, hatcheries have produced 105,802,000 poults — up 23% from comparable output in 1960. The cumulative output (January through September) of heavy white breeds was 30,055,000 —up 46%; other heavy breeds, 64,456,000—up 16%, and light breeds, 11,291,000—up 10%.

University of Illinois Sponsors Feed Course

URBANA, ILL.—The University of Illinois, with the support and encouragement of the Illinois Feed Assn., this week announced a six-session, non-credit course prepared primarily for feed manufacturers and mixers in north central Illinois. However, others are welcome to attend.

The course, generally titled, "Economic Considerations in Marketing Commercial Feeds," will be held Oct. 26, Nov. 2, 15, 22 and 30, and Dec. 7, in the basement of Baker's, Inc., Leland, Ill., at 7 to 9:30 p.m.

The instructor is Dr. R. J. Mutti, department of agricultural economics.

The registration fee is $12 per person, payable at the first class meeting. Checks should be made out to the University of Illinois.

Corn Products Files Additive Petition

WASHINGTON — Corn Products Co., Waverly, N.Y., has filed a petition with the Food and Drug Administration regarding use of diethylcarbamazine in dog food, according to the Federal Register.

The Corn Products proposal is for the issuance of an amendment to provide for the safe use of diethylcarbamazine in dog food which may be fed continuously for any 18-month period.

$10,000 Fire Damage

OGDEN, UTAH—More than $7,000 damage was reported to a full line of Pillsbury prepared feeds stored at the Top of the World Supply Co. when fire swept through the Ogden feed outlet.

Forrest McFarland, owner and operator, said an additional $3,000 loss was suffered in building damage.

FERTILIZER OFFICIAL DIES

Walter J. Fowler, 71, vice president of the Everglades Fertilizer Co., Ft. Lauderdale, Fla., died Oct. 4 in Miami, Fla. In addition to his association with the fertilizer firm, Mr. Fowler was also a bank director and owner of a packing house.

ORDERS

(Continued from page 1)

key production and which, of course, must mean a higher price per pound for turkey meat to the consumer.

There is some merit in this proposal since it is clear that the turkey industry is not in what may be called a comfortable profit situation, but whether the consumer will continue to buy turkeys in volume at higher price levels will be the testing ground of the USDA proposals.

The hatchery egg proposal plans to bottleneck distribution of turkey eggs to incubators on some past historical production base. Likewise, at the slaughter level USDA would impose the same bottleneck point of controls.

It has been suggested that such controls represent the imposition of the previously illegal "grandfather's clause" of production controls which retained a basic industry group and would prohibit newcomers from entering the field. However, USDA now tells the industry committee that through a reserve production pool it will be able to permit entry into either the hatching egg deal or the slaughter operations as the operating committees of each group may assign quotas to newcomers.

Starting with the egg marketing proposal for the turkey industry advisory committee, the government would provide a base for distribution of hatching eggs to the incubator operators from some previous period.

Using the hatchery control technique, USDA assumes that it can again channel the production of birds at the slaughter level bases on a committee estimate of what quantity in terms of tonnage, quality and variety of birds the market can take in any marketing period.

Consensus for Orders

First reports from members of the turkey committee say the consensus is favorable to development and recommendations for approval of a national turkey marketing order and agreement will be forthcoming.

Following the meetings here this week, the committee must return to home base and prepare a definite order recommendation within the guide lines of the skeleton order technique which has been submitted to them.

Information from committee members says that there is yet to be developed any definite course of action. The committee is overwhelmed by original enthusiasm for production controls as are many other commodity groups who sense some heaven-sent cure-all in the form of the marketing orders and agreements.

The great problem now is to pass through to the industry itself outside the industry committee, judgment and basic understanding of where they would go with some of the control pitfalls which may result.

One must consider the danger of higher prices, which may result from a complete following of the USDA proposals. There are about six states which produce somewhat more than 60% of all market turkeys consumed in this country. That weighting can readily make for a favorable referendum vote in favor of orders and agreements. But is it not likely that high prices may encourage expansion of turkey production in the smaller turkey producing states?

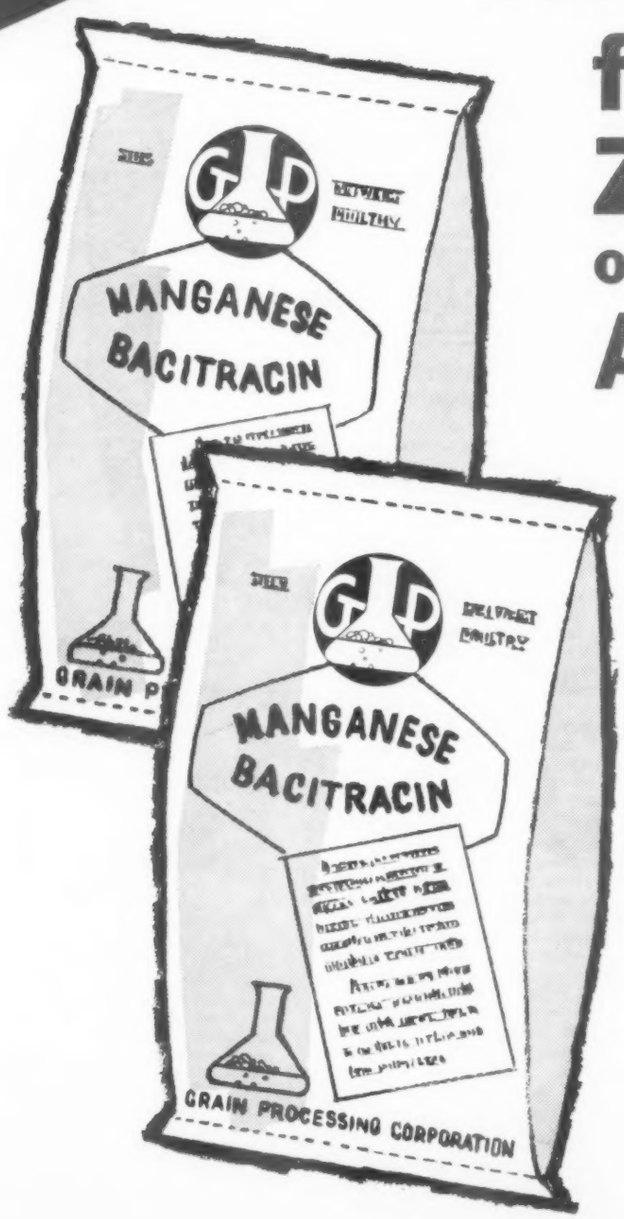
High prices always attract fringe operations, even in organized industry. Is there any reason to believe that it will not occur again in the turkey industry under tight marketing production and market controls.

In a related story on page 1 of this issue is a skeleton text of a turkey marketing order and agreement. It follows the same principle of the hatchery order.

APPROVED

MANGANESE BACITRACIN

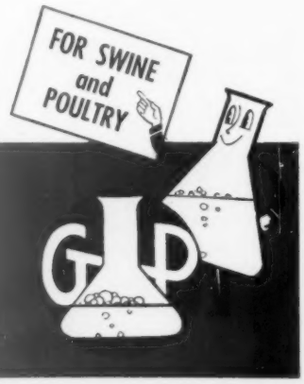
for use with Zoalene or Amprolium



MANGANESE BACITRACIN — the *selective* antibiotic supplement that destroys harmful bacteria without harming helpful organisms — has been fully cleared by the Food and Drug Administration for use in feeds containing either Zoalene or Amprolium.

MANGANESE BACITRACIN may be used with these new Coccidiostats in poultry feeds at a range of 4 to 50 grams of Manganese Bacitracin per ton of feed. It may be used in swine feeds at 10 to 50 grams per ton.

MANGANESE BACITRACIN has been proved by test to be as stable as any similar antibiotic offered to the feed industry. Results also show greater growth response and highly improved feed efficiency. And—it's economical.



Efficacy of Flavors, Enzymes and Other Additives Expressed by Scientists at Nutrition Conference

By FRED E. TUNKS
Feedstuffs Staff

COLLEGE STATION, TEXAS — Confidence in and evidence of the efficacy of certain feed additives or supplements were expressed here by industry and college spokesmen Oct. 4-6 during the Texas Nutrition Conference.

Because their application to animal agriculture is perhaps more recent than that of other additives, latest results of scientific examination regarding flavors and enzymes assumed prominent positions in the discussions. Reports heard here on the Texas A&M College campus will very likely stimulate further studies designed to test and define the uses of flavors and enzymes in feeding.

It was reported by a Texas A&M poultry scientist that tests indicate a recently formulated flavor compound has a favorable effect on poultry feed conversion, improves poultry feed consumption and could, under certain conditions, result in feed cost savings.

Results of tests reported by an allied industry representative show that a multiple enzyme supplement improved meat and milk production and feed efficiency in beef cattle fattening rations, high-concentrate sheep rations, dairy cattle milking rations and in turkey and chicken rations based on grains other than barley.

This industry report on enzymes was supplemented by an agricultural experiment station analysis of two commercial enzyme preparations in broiler feeding tests.

Also on the nutrition conference's program were reports which presented recommendations for the feeding of dried whey, antioxidants, arsenicals, trace minerals, phosphorus and other supplements.

Summaries of these reports follow:

EFFECT OF FLAVORS ON FEED CONSUMPTION—Reporting the results of Texas A&M experiments, Dr. C. W. Deyoe of the school's poultry science department, announced, "It appears that a flavor has been formulated which, when added to poultry feeds, has a favorable effect on feed conversion and improves feed consumption under field conditions."

Dr. Deyoe said this in reference to "EBPA," a flavor compound composed of ethyl butyrate and other esters, phenylacetic acid and other organic acids, oil juniper and other essential oils., diacetyl and maltol. In screening tests involving flavored water, this flavor compound appeared to be preferred over other flavors such as butter, barley, quince, scatol, safrol, lilac and combinations of butter with molasses, barley, orange, garlic, licorice, camphor, quince, chocolate, onion and coconut.

Dr. Deyoe reported that the four- and eight-week results of four studies with feed flavored with EBPA indicated that the flavor had little effect on the weight gain of broilers —but a significant improvement in feed conversion was observed. When the results of the four flavor experiments were averaged, feed conversion at four weeks of age ranged from 4.6% to 8.8% and the average improvement for all groups fed the flavored feed was 6.2%.

At eight weeks of age, the average improvement from the flavored feed ranged from 1.7 to 3%.

"Under the conditions of these tests," Dr. Deyoe related, "this improvement in feed conversion would result in a saving of 3 tons of feed for 1 lb. of gain per bird for 50,000 broilers at 4 weeks of age. At 8 weeks of age, the saving in feed for 3 lb. of gain per bird for 50,000 broilers would be approximately 4¼ tons of feed."

Also, Dr. Deyoe observed that flavored feed may have beneficial effects in addition to an improvement in feed utilization. Field reports have indicated that the flavor, EBPA, has been used successfully in turkey feeds, particularly during the early stages of growth and to get the birds back on feed following outbreaks of disease. The flavor has been successful in improving feed consumption of laying hens during hot weather.

ENZYMES — THEIR PLACE IN LIVESTOCK AND POULTRY FEEDING—"The past several years has seen a renewed interest in the fortification of livestock and poultry rations with enzyme supplements," said Dr. John W. Stroud, technical representative in the animal feed department of Pabst Brewing Co., Milwaukee. "During this period there has been a vast amount of research accomplished concerning response of several classes of livestock and poultry to enzyme supplements."

Enzyme supplements studied most extensively, he said, have been those derived from bacterial or fungal fermentations. Most of the enzyme sources evaluated have been crude or feed-grade and consisted primarily of amylolytic and proteolytic enzymes, or a combination of these enzymes with others such as gumases (plant gum digesters).

Results reported by Dr. Stroud were from tests conducted by college scientists, research scientists of feed manufacturers and commercial feedlot or dairy operators and poultrymen. A multiple enzyme supplement (Zymo-Pabst) was employed in all the tests reported. This supplement contained B. subtilis dried fermentation solubles, with a minimum of 12,500 units starch digesting activity, 7,500 units of protein digesting activity and 30 units of plant gum digesting activity per gram.

In his summary, Dr. Stroud said the use of a multiple enzyme supplement produced the following meat or milk production and feed efficiency results:

	Production Increase	Feed Efficiency Increase
Beef cattle fattening rations	7%	5%
High-concentrate sheep rations	5.8%	7%
Dairy cattle milking rations	2%	5%
Poultry rations based on grains other than barley:		
Turkeys, growing..	5%	3%
Chickens, growing.	8%	4%

ENZYME SUPPLEMENTATION OF BROILER FEEDS — The effectiveness of enzyme supplements in broiler feeding appears to be greatest in relatively lower-energy diets, it was reported by Dr. A. A. Camp of the Texas Agricultural Experiment Station at Gonzales. And the effectiveness of these supplements appears

(Turn to EFFICACY, page 126)

CONFERENCE SPEAKERS VIEW TURKEYS—A flock of turkeys used for experimental work at Texas A&M College is viewed during the Oct. 4-6 Texas Nutrition Conference by (from left): Dr. James Waddell, manager, technical development nutrition and therapy, E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.; Dr. John Stroud, technical representative, animal feed department, Pabst Brewing Co., Milwaukee, Wis., and Dr. J. R. Couch, poultry science department, Texas A&M.

Letters to the Editor

'CONTROLS, YES, BUT FROM INDIVIDUALS'

Minneapolis

To the Editor:

Considerable comment has been made regarding the depressed poultry markets. It appears that some segments of the feed trade believe the unhappy situation in the broiler and turkey industries will never clear up without marketing orders from the federal government. They point out the distinction between marketing orders and production controls. They seem to feel that control of the industry through use of marketing orders is practical and desirable, while use of production controls is undesirable. For some strange reason, marketing orders seem acceptable because they would be administered by committees elected by industry.

But, the marketing order is still a government control over the industry regardless of who administers the program. Considering the net result to be achieved, marketing orders and direct production controls must be considered as one and the same thing. In order to be effective, a marketing order must carry enough authority to regulate production. Therefore, a marketing order is, in effect, a production control.

Undeniably, the broiler and turkey industries need control today. That control should come from individuals who have a sacred and historic right to make such decisions. The law of "diminishing returns" is a great equalizer and prodder.

The framework of government authority to control all agricultural commodities exists today since those commodities that the government does not have the right to regulate are specifically listed as exceptions. Congress has but to "strike out" one word from the Act and by doing so sets the stage for controlling that commodity. Let's hope that feed people, producers and processors alike, do not abdicate the responsibility which is theirs to determine their own futures no matter how perilous and difficult the task.

F. T. Heffelfinger, II
Vice President
F. H. Peavey & Co.

Grain Shipments Near Normal at Wheeler Dam; 95% of 1960

DAVENPORT, IOWA — Tennessee River barge traffic has returned to near normal levels since the completion of emergency transfer facilities at Wheeler Dam, where a lock failed four months ago, L. J. Van Mol, Tennessee Valley Authority general manager, recently reported.

It is expected the collapsed lock will be repaired and restored to service no later than June 2, 1962. Grain and grain product shipments at Wheeler, which typically account for more than half the total traffic there, were almost back to normal in August—being about 95% of the comparable 1960 shipments.

A road was first used to haul grain around the dam, until construction of "marine legs", with a sea barge mounting one leg, and installation of a high conveyor. Midwestern grain is unloaded and lofted over the dam to waiting barges above in Wheeler Lake and, from there, is shipped to four ports upstream. A second marine leg was being placed in operation recently.

According to the Waterways Journal, much traffic on the Tennessee is to and from ports below Wheeler Dam, and was not affected by the lock collapse. Barge traffic on the entire river in August was at 93% of the comparable total a year ago.

Tows have been unable to use the lock of the northern Alabama dam since the lock's landward wall broke apart on June 2. Investigation has revealed cracks in the remaining wall as well, and the entire lock must be replaced.

Freight has been moving around and over the dam by mechanical loading equipment, through pipelines and by truck. Present facilities are capable of handling just about any cargoes that moved before, Mr. Van Mol was quoted as saying.

These facilities were provided by TVA, but shippers themselves are conducting, and paying for, the transshipment operations.

Chick Placements Down in 15 States

SALISBURY, MD. — Chick placement decreases came about in 15 of 22 important broiler producing states last week. Placements at a total of 28,246,000 were 1% below the previous week and slightly below the corresponding week a year ago. States in which sizeable decreases occurred include Arkansas, Delaware, North Carolina, Connecticut and Mississippi.

Hatcherymen in the 22 states set 39,441,000 eggs during the week. This figure was 2% above the previous week, but 5% below the corresponding week a year ago. Settings were up from the previous week in 14 of the 22 states. Sizeable increases were reported in Pennsylvania, Alabama, Virginia, Texas and Washington.

Growers Credit Corp. Of Omaha Established

MINNEAPOLIS — The establishment of Growers Credit Corp. of Omaha was announced this week by Connell Saltzman, president of Growers Cattle Credit Corp., Minneapolis. Both firms are subsidiaries of the I. S. Joseph Co., feed jobbing concern headed by Burton M. Joseph.

The Omaha firm will be managed by Nathan R. Borgman, recently retired secretary-treasurer of the Federal Intermediate Credit Bank of St. Paul. It will specialize in financing of beef feeding operations in Wyoming, Nebraska, South Dakota and northern Missouri.

CAPITAL COMMENT

By John Cipperly
Feedstuffs Washington Correspondent

Turkey Mirage

WASHINGTON—A fair representation of the turkey industry—and probably the poultry industry — is basking in the mirage of marketing orders and agreements. Some see a pot of gold at the end of a rainbow.

After an examination by these industries it may be discovered that the pot may ultimately reflect a chamber of horrors.

Leaning Toward Controls

There appears to be a decided leaning both on the part of the government advocates and the majority of National Turkey Advisory Committee members that the simplest way to this aerial paradise is to apply controls over the turkey industry at the level of the hatchery egg producers.

Such a situation is indeed a paradise for the government controllers, since it reflects a bottleneck point where administratively the U.S. Department of Agriculture or other government agencies can make quick and effective checks on production and distribution of turkey hatchery eggs.

However, it must be noted that the purpose of marketing orders and agreements is to boost farm level prices and that can only mean an artificial political boost of cost of turkey meat to the consumer. Perhaps the consuming public may affectionately pay more per pound for turkeys without reducing their purchases. But how about the turkey egg hatcherymen?

Under the existing law, if the turkey industry jumped for controls at the hatchery level and made sharp cutbacks in the permitted distribution of turkey hatchery eggs, what is to prevent newcomers from entering this field, if the price of turkey eggs suddenly shot upward?

Any marketing order and agreement for turkey eggs could eventually institute a "grandfather's clause," which might exclude newcomers in the business.

These are some of the things that could happen if the turkey industry buys any USDA control program under the provisions of the Agricultural Marketing Act of 1937. That act was not amended in the broad sense which USDA wished. The government, in the farm omnibus bill, asked for power to enforce production controls and also broader explicit authority to use compensatory payments for excess production. Under the existing act, USDA does have authority to make parity payments for excess production to be removed from the market. That is the additional concept of so-called supply-management plus a price-fixing mechanism of removal of surpluses from the market. But, notwithstanding its power to invoke parity payments in the act of 1937, USDA needs additional authority from Congress through appropriations to finance such operations.

It is not likely that the return of the 87th Congress in January, 1962, will harbor any such further disbursement of government funds, particularly when Congress understands that these programs mean that the consumer will pay more at the market place for the end products. A penny per pound boost in many commodities runs into millions of dollars out of the wage-earners' pocketbook.

FEED MAN DIES

PIERCETON, IND.—Jacob C. McCarter, 69, retired hatcheryman and feed mill operator, died recently in the Veterans Hospital, Fort Wayne, Ind. Survivors are his wife, Marie, a daughter, sister and brother.

Nulaid Announces Plans for Entering Poultry Marketing

SAN LEANDRO, CAL.—Plans for entering the field of poultry marketing have been announced by Nulaid Farmers Assn. here. The cooperative said the action is being taken "to meet the challenge of integration."

Nulaid's announcement said, "This sorely-needed service has been requested by members for several years. The feed volume that this will produce will work toward lowering operating costs and, consequently, feed costs. All members will benefit through the increased volume of feed moving through association mills. Integration of the fryer industry has adversely affected Nulaid's feed volume, and this move should work towards overcoming this problem.

"As to the future, it's apparent that the trend in all agriculture is to larger operating units. We might well predict an increased feed volume for Nulaid—not only with poultry feed but other phases of agriculture as well, such as dairy, swine and cattle feeding. The necessity of an aggressive and practical marketing program of members' products is becoming increasingly important. Volume is needed to assure the farmer a voice in today's competitive food field and, to obtain this volume to give him strength, he must cooperate with his fellow producer."

Nulaid has been in the egg marketing field for 45 years, and it reports that it markets 40% of the eggs produced in northern and central California.

Feed Policy Change

Another policy change announced by Nulaid is that all members utilizing the association's marketing facilities must patronize NFA's feed department. Explained the association announcement, "Actually, when doing so, producer is only patronizing his own business by feeding Nu-Farm feeds, and as volume goes up, costs do down."

Nulaid noted that it has been integrated for egg producers since its feed department was opened in 1926. Further tracing the history of integration, Nulaid pointed out that integration in California's meat bird industry was first felt in 1955 and that there are estimates now that 95% of all the state's fryers are raised on integrated guarantee programs.

The statement on the impact of integration continues by pointing to the turkey industry where about 75% of the birds raised are under contracts and indications that the turkey hatching egg business will become integrated.

"Integration in the egg industry is not a dominant factor," the announcement in Nulaid News, the association's publication, said. "There are guarantee programs in operation, with poultrymen receiving 5 to 6¢ a dozen for marketable eggs produced. In some instances, producers are paid this flat rate and others on an average weekly market price."

Nulaid notes that the most important effect integration has had on it is the "closing of the egg marketing agreement to egg producers." "Nulaid members are now producing for a given market with a quality pool for those whose eggs meet certain standards," the association said. "Producing for a given market results in more orderly marketing. It is one way that those in farming can work towards reducing surpluses."

FEED MAN ELECTED

NEW CASTLE, N.H.—Charles R. Hopkins, treasurer of E. C. and W. L. Hopkins, Inc., manufacturer of poultry and dairy feeds in Greenfield, was reelected second vice president of the New Hampshire Manufacturers' Assn. at the organization's annual meeting in New Castle.

Edwin Piper Charlotte Rosenbaum

Iowa Feed Company Appoints 2 Officials

DES MOINES, IOWA—Triple "F" Feeds, a feed company newly formed by former officials of Foxbilt Feeds, Des Moines, has appointed a field sales manager and an advertising-promotion manager, it was announced by J. K. Lepley, director of sales.

Edwin Piper, Des Moines, has been named field sales manager of the new firm's operation for its seven-state area of Minnesota, Iowa, Illinois, Wisconsin, Nebraska, Missouri and Kansas. Mr. Piper was formerly field sales manager and manager of the mobile mill division of Foxbilt Feeds. Prior to that, he was a field sales manager for Ames In-Cross, the hybrid chicken division of Foxbilt. Mr. Piper graduated from Brown's Men's Business College at Mt. Vernon. Prior to joining Ames In-Cross, Mr. Piper was in the U.S. Air Force for 6½ years.

Charlotte C. Rosenbaum, Des Moines, formerly with Foxbilt Feeds' sales division, has been named advertising-promotion manager for Triple "F." Before joining the Foxbilt organization, Mrs. Rosenbaum was director of advertising and head of the fund-raising sales division of Peanut Corporation of America, Des Moines. Mrs. Rosenbaum attended George Washington University, Washington, D.C., and Kansas City University, Kansas City, Mo.

Priebe Egg Plant in Iowa Changes Name

SAC CITY, IOWA—The name of the Priebe & Sons, Inc., egg processing plant here has been changed to the Sac City Egg Co. Randolph Enterprises, Guthrie Center, have worked out a temporary agreement with Priebe for operation of the plant.

The plant was one of three in Iowa closed by Priebe & Sons Sept. 28. Priebe is said to be in financial difficulty due to low broiler and turkey prices and has petitioned federal district court asking to continue in business pending possible realignment. (Feedstuffs, Oct. 7, page 14.)

Elect Feed Officers

CHICAGO—The Chicago Feed Club elected Norman R. Glass, Allied Mills, Inc., president for the coming year, at its annual election night. Other officers elected were: David M. Mann, Cereal By-Products Co., vice president; Edward J. DeLaet, St. Regis Paper Co., secretary; B. R. Edwards, Darling & Co., treasurer; John J. Brennan, Abbott Laboratories, and Max O. Taylor, the Quaker Oats Co., directors.

Iowa Poultry Assn. States Opposition to Controls on Industry

DES MOINES, IOWA—At its annual meeting in Des Moines, the Iowa Poultry Assn. voiced its opposition to any type of governmental control program for the poultry industry.

In a statement of policy, the association said it does not concur in the opinion that control measures of some type are inevitable.

"To the contrary, the association urges industry members to voice their desires for free prices and free enterprise to combat the socialistic programs proposed by the U.S. Department of Agriculture," the group said in a prepared statement.

"The association does not believe you can strengthen the weak by weakening the strong; that you can legislate prosperity for the unsuccessful; that some magic formula can be concocted in Washington to solve the ills of the industry.

"The association believes that in our free society the right to succeed carries with it the right to fail. If, through legislative action of one kind or another, we remove the right to fail, we ultimately will also remove the right to succeed beyond mediocrity.

"The creeping socialism of agriculture must be stopped."

Iowa Farmers Feed 90 Head of Cattle On Contract Basis

ESTHERVILLE, IOWA — Ninety head of beef cattle are being fed for market on a contract basis on the Joe Origer farm near Estherville, Iowa.

As explained in the October issue of the Iowa Farm and Home Register, Mr. Origer and his three sons are guaranteed 20¢ lb. of gain put on the cattle. However, should the market price for the cattle be higher than the 20¢ guarantee, the Origers will share the additional money equally with the company.

The Origers entered the integrated plan upon advice of Max Soeth, Estherville banker. "If they had paid 25¢ lb. for cattle," according to Mr. Soeth, "they would have been in trouble, the way the fat cattle market is."

"The feed company which supplies us with protein supplement says we should be able to put gains on the cattle for 16¢ lb., and maybe we can," commented Bill Origer.

Another feature of the feeding contract deals with death losses. The company stands the first 1%, the Origers pay additional losses.

The cattle had an average weight of 740 lb. when they arrived at the farm March 11 from Worthheimer Cattle Co., Madelia, Minn. They have been fed 100 lb. of protein per day since. Following the feeding of corn silage the first 90 days, the cattle were started on ground ear corn. They are fed twice a day now, and get 16 lb. of ground ear corn per head per day, plus alfalfa brome hay.

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Controls by Poultry Industry Might Be Best: Congressman

By Special Correspondent

INDIANAPOLIS, IND.—Rep. Tom Steed (D., Okla.), conducting a House Small Business subcommittee hearing here this week on the problems of the poultry industry, suggested to the more than 50 poultrymen and farm leaders in attendance that any industry controls might be better administered by representatives of the industry throughout the nation than by people in government.

Rep. Steed said, "We fundamentally oppose government controls, too, but we also oppose bankruptcy."

The hearing, fourth of its kind, is part of the subcommittee's study concerning production and distribution of poultry, which have forced prices to growers below cost of production. Rep. Steed said it has been charged that competition in buying has been substantially lessened as a result of progressive concentration of buying power and distribution facilities in the hands of fewer concerns.

Oppose Federal Controls

At the Indianapolis hearing, George Doup, president of Indiana Farm Bureau, declared that poultry producers throughout the state "have consistently expressed their opposition since 1958 to suggested use of federal controls, such as nationwide marketing orders or production quotas.

"The history of governmental or artificially imposed controls in agriculture in the U.S. is one of dismal failures," Mr. Doup said.

"If such controls were imposed on the poultry business in Indiana, it would stifle growth and competitiveness, discourage efficiency and involve producers, feed dealers, hatchery men and processors in untold red tape," the Farm Bureau spokesman said.

Robert L. Hogue, executive secretary of the Indiana State Poultry Assn., echoed Mr. Doup's position. He declared a recent survey of his association members showed at least 64% of the membership opposed federal controls.

But, John C. Rabe, Bristol, Indiana Farmers Union president and a large poultry producer, said in a statement:

"I am not about to insult the intelligence of the committee by a childish statement that somehow conditions will improve as free market or competitive influences are brought to bear in the situation.

"The situation in the broiler industry is chaotic, and this chaos can do nothing but worsen unless intelligent remedial measures are applied, and applied very soon."

"Forgotten Person"

Congressman William M. McCulloch (R., Ohio), a member of the committee, said, "We find in government that the producer, manufacturer and retailer are protected by government controls, but the consumer is the forgotten person."

Albert E. Grayden, a poultry producer from Ramsey, said that federal regulation of the business will mean that the housewife "will miss mighty fine bargains she has had in the last few months."

The hearing, held in the State Senate Chamber, brought statements that contract poultry raising arranged by large feed companies has brought the overproduction which has depressed poultry prices.

Recent prices, particularly of broiler chickens and turkeys, have been too low to return the growers' feed costs, some poultrymen said.

Spokesmen of both the Farm Bureau and Farmers Union told the committee that the poultry business has been poor in Indiana since 1958.

Soy Meal Stages Further Comeback

By F. C. BISSON
Feedstuffs Special Correspondent

CHICAGO—For the second successive week soybean meal gave evidence of recuperative power although the recovery was not quite as broad as during the preceding weekly period.

Also, the current week's price recovery differed from its immediate predecessor in that instead of the unrestricted and Eastern Trunk Line billing meal moving along pretty well in step with each other, recovery was considerably more marked on the ETL.

Because of this, the price spread narrowed appreciably and returned to the more or less historical relationship.

In attempting to account for the relative strength in meal carrying ETL billing, the only logical explanation is that the supply situation in ETL territory has resulted in an increased demand for the product, thereby erasing some of the disadvantage that had accrued to that type of billing particularly during the recent months.

Not enough time has elapsed as yet to be able to ascertain whether or not the U.S. Department of Agriculture is going to be able to "sell" some of the foreign nations on the idea that soybean meal should pass muster as a human food. In all probability, nothing of a concrete character on this point will be evident for another couple of months.

In the meantime, one need look no further than the very apparent holding tendency on the part of farmers with respect to marketing their beans, if searching for one of the reasons for the stepped-up interest in soybean meal. While soybean stocks in Chicago have shown a fair pickup since the new crop began to move, the increase has not been commensurate with the close to 30% step-up in the size of the 1961 crop over last year's.

Word from the heart of the soybean belt indicates the growers require no exhortations from Washington to store the commodity and borrow 45¢ bu. more than could be borrowed at this time last year or the year before.

There are reports that "every chicken house" in downstate Illinois is filled with soybeans.

Of course, if soybeans move up to or very close to the loan figure prior to the deadline for applying for loans, beans are bound to trickle into commercial channels. Under such a circumstance, the official support price of $2.30 could well prove to be somewhat of an architectural paradox . . . both the floor under the market and the ceiling over it. Users of meal are going to have to watch marketings of the raw commodity much more sharply than in years gone by, even in the face of an all-time record crop of beans.

Broiler Prices Gain, But Egg Mart Slips

Substantial improvement in the broiler market was evident this week. Paying prices in southern growing areas advanced 1-2¢ this week to 11-12¢, and in Delmarva prices tended slightly higher with most sales near 14¢.

Egg prices slipped during the week ended Oct. 18. Declines ranged from 1 to 6¢ on large and from 1 to 4¢ on mediums and smalls. Moderate temperatures were believed to be contributing to increased supplies in most sections of the country.

Osborne McMillan Buys North Dakota Milling Company

MINNEAPOLIS—Purchase of the Math Braun Milling Co. properties at Wahpeton, N.D., has been announced by Osborne McMillan Elevator Co. here.

The Osborne McMillan announcement said that Earl Nelson of Fullerton, N.D., presently a superintendent for O & M, will take over management of the operation and will also continue as superintendent for several other O & M elevators in the area.

The business will continue to be operated as a grain elevator and feed mill. O & M's Farmwell Feeds will be manufactured and sold along with the feeds being handled at the present time, the announcement continued. An O & M spokesman said that the North Dakota firm had a number of dealers for its feeds in the south end of the Red River Valley in the three-state area of North Dakota, South Dakota and Minnesota.

O & M said it is not anticipated that the flour milling operation of the firm, closed down in 1959, will be re-opened.

A sidelight of the ownership change is that both Osborne McMillan and Math Braun were started in 1887-88 and at the present time are operated by the third generation of the original owners' families.

Hayward Co-op's Feed Volume Up

HAYWARD, CAL. — Feed volume of the Hayward Poultry Producers Assn. for the first nine months of the year is 27% over that for the same period a year earlier, according to the association's publication, Co-op Feeder.

Formula feed production of the association for the first nine months totaled 37,339 tons compared with 29,375 tons in the same period of 1960. The association's production of feed in the same period of 1959 was 24,360 tons.

Sales volume for the nine month period this year was $3,220,000. Sales in the same period of 1960 totaled $2,590,000 and in the same period in 1959 were $2,435,000, the association said.

The poultry producers cooperative noted that its feed production has increased 44% in two years, not including the volume of the Rio Linda facility recently added through a cooperative merger.

Because of this growth, it was also pointed out that after 30 years of using the services of the Andersen-Smith Milling Co. for laboratory control and procurement of concentrates, the Hayward Poultry Producers Assn. plans to assume the responsibility for its own complete nutritional program. The association announcement states that the Andersen-Smith personnel will continue to work with the association until the whole program is under its control.

Views Test on Wheat

STOCKTON, CAL. — John A. Browning, Agricultural Marketing Service, Portland, Ore., viewed a demonstration of the sedimentation test for wheat given at Stockton by Van P. Entwistle of the California Bureau of Field Crops and Agricultural Chemicals.

The AMS grain division is charged with performance of these tests. Charles White, in charge of the AMS Stockton office, made facilities available for the demonstration. Mr. Browning was accompanied by Murray Bell of the San Francisco office.

AFMA

(Continued from page 1)

enemies . . . the mightiest force in our powerful country . . . and studied with great interest by experts from nations throughout the world."

These are opening statements from a new booklet published by American Feed Manufacturers Assn. entitled, "Mightier Than Missiles," released at AFMA's public relations conference here Oct. 18.

Presentation of a slide film summary of the booklet was the climax of the conference.

According to the booklet, "The greatest of all weapons is America's production of food and fiber . . . its agriculture and agribusiness. This is a dynamic, revolutionary method of feeding and clothing people, unparalleled in the history of mankind."

The first public presentation of the booklet was made to Orville L. Freeman, secretary of agriculture, in Washington, D.C., a week prior to the Chicago meeting. In accepting his copy of "Mightier Than Missiles," Mr. Freeman said, in part: " . . . may I express to you and to the American Feed Manufacturers Assn., my appreciation for very vividly, very dramatically, and very effectively presenting a fundamental and important fact which is far too little recognized by our people."

Introduction

"Mightier Than Missiles" relates the significance and development of modern agriculture, agribusiness and the livestock and poultry feed manufacturing industry. In its introduction, AFMA's president, W. E. Glennon, notes, "Agricultural productive efficiency has soared to such heights that only one person in 26 is now engaged in tilling soil and tending livestock. By contrast, Russia is forced to enslave nearly half its total population in collective farms. Should such a condition exist here, a large segment of our industry and commerce could not exist."

Mr. Glennon continued, "Our food supply is a most prized possession. Offered a wide choice of highly appealing foods, Americans have selected greater amounts of nutritious meat, milk and eggs . . . available at reasonable prices, due in part to more efficient feeding. The manufactured feed industry has played an important role in utilizing new animal nutrition knowledge, and has become a source of new wealth and employment for other segments of our economy."

According to Mr. Glennon, in less than half a century, the feed manufacturing industry has grown from a handful of grain and by-product mixers to the 13th largest manufacturing industry in the U.S., and the largest in the world devoted exclusively to providing goods and service to agriculture. Consisting of 6,000 plants and 25,000 dealers, it has a total investment of nearly $2 billion and annual gross sales of nearly $4 billion.

The industry creates "new wealth" in the economic bloodstream of America by purchasing great quantities of materials and services, including: Over a billion dollars worth of grain and high protein meals; $400 million worth of transportation; $300 millions of food industry by-products; $200 millions of vitamins, antibiotics, minerals and chemicals; and hundreds of millions of fuel, utilities, credit, machinery, advertising, autos and trucks, and a host of other items needed in the production and sale of feed.

Over 50,000 copies of "Mightier Than Missiles" were sent to agricultural teachers and leaders throughout the nation at the time of the Chicago conference. Subsequent distribution will be made through feed manufacturers and dealers. Individual copies may be obtained by writing to the offices of American Feed Manufacturers Assn., 53 West Jackson Blvd., Chicago.

FROM THESE THINGS COME HAPPY CUSTOMERS

Prentice Farmers Elevator recently entertained their customers and neighbors at a fish fry. An "Off-the-Car Sale" and a cash tonnage donation to local 4-H clubs were the commercial features. Ed Merritt, shown at left, was host with Howard Davenport, Critic Feeds Territory Manager, assisting.

★ FAIR PRICE
★ PLUS PERFORMANCE
★ PERSONAL SERVICE
★ EFFECTIVE PROMOTION
★ FLEXIBLE PROGRAMS

(To meet demands of varied feeding operations without confusion)

Ed Merritt, manager of Prentice Farmers Elevator, Prentice, Illinois, adds: "Our happy customers are making Critic the number one line here and we've only had the franchise for six months. Critic has everything to help us get and keep customers."

Prentice Elevator uses Critic-Base Mixes and Concentrates in their up-to-date local milling operation. Mr. Merritt and his staff have found that the flexibility of the Critic line is enabling them to serve their wide variety of feed customers better than ever before.

A CRITIC-BASE MIXES and CONCENTRATES PROGRAM COULD BE A NEW BUSINESS CATALYST FOR YOU, TOO

With a Critic-Base Mix you can make up-to-date complete rations from grains and ingredients readily available in your locality, thus saving freight and handling costs. The quality-controlled features of Critic-Base Mixes assure your customers of plus performance in the feedlot. The custom-built easy-to-follow formula charts made especially for you will assure you of a trouble-free mixing operation.

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Soluble Lactates Mix recommended for Ketosis Control in Dairy Program

Norwich, N.Y.— Dairy herd tests show that Soluble Lactates Mix, a standardized form of calcium and sodium lactates produced by Sheffield Chemical, can greatly reduce losses commonly associated with ketosis (acetonemia). Soluble Lactates Mix is effective both for prevention and control of ketosis.

Ketosis control is now recognized as an opportunity in the feed dealer's program. Ketosis hits hardest in high-producing herds, creating a continuing problem for many top dairymen.

Soluble Lactates Mix is easy to use in the dairy ration . . . is palatable, has excellent herd acceptance . . . saves milk-dollars in ketosis prone cows . . . is an ideal product to round out your dairy program. It comes both in 50 lb. bags and in handy packages for over-the-counter sales.

Samples, prices and complete details are available from Dept. F-101, Sheffield Chemical, Norwich, N.Y.— Sealtest Division of National Dairy Products Corporation.

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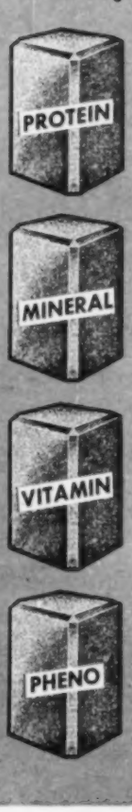

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MICHIGAN POULTRY AND HATCHERY FEDERATION OFFICERS—Officers and board members of the Michigan Poultry and Hatchery Federation, elected at a Michigan Hatchery Conference at Michigan State University, East Lansing, are pictured above. Carroll Kraft, left, standing, of Grand Rapids, is the new president. Officers and board members of the organization, which is composed of some 60 hatcheries throughout the state, are, seated, left to right, Ed Brewer, Dundee, vice president; Arnell VanderKolk, Holland; Roy Nykamp, Essexville; Harold Nagelkirk, Zeeland, and Albert Janssen, Zeeland. Back row, left to right, Mr. Kraft; Fred Billets, Hamilton; Dale Reichard, St. Louis; Irving Lemmen, Howell, and Dr. E. S. Weisner, Michigan Department of Agriculture. Missing from the photo are Dr. Howard C. Zindel of Michigan State University; E. C. Foreman, Lowell, and George B. Scott, executive secretary of the organization.

Feedman Says Michigan Could Become Self-Sufficient in Eggs

By Special Correspondent

EAST LANSING, MICH.—A midwest feed company official told a group of Michigan hatchery people at Michigan State University that in 2-4 years Michigan could change from an importer of eggs to a self-sufficient egg producing state through the use of cages.

"Michigan has all the ingredients to become an egg producer—money, grain and good markets," R. D. McGranahan of the Ralston Purina Co., told a Michigan Hatchery Conference gathering at the university's Kellogg Center for Continuing Education.

"If Michigan doesn't become an egg producer, the South or West or some other area will," said Mr. McGranahan. "And Michigan can't afford this—it needs the business."

"Effective egg production is like an industry without smokestacks," said the speaker. "This industry provides labor and income, and almost every farm today needs that extra income."

Mr. McGranahan reminded the more than 100 hatchery owners and operators that today egg production is "big business." "It is no longer a housewife's job—it takes people with sound management and sufficient capital," he said.

Through the use of cages, climate is not the problem it once was, he maintained. Proper ventilation and insulation virtually eliminate cold as a deterring factor in egg production, for cages offer better temperature control and more pleasant working conditions.

Cages, he declared, really make for better poultrymen. Due to the nature of the cages, he explained, an operator has automatic control over such management factors as the right amount of feed, adequate feeder and water space, rodent control, culling and other sanitation problems.

"Cages will make a poor operator an average operator, and an average operator an excellent operator," he maintained. "You can't improve an excellent operator," he admitted. "But how many do you know?"

Cages Not Costly

Considering cost, Mr. McGranahan contended that with stair stepping and modified double decking, two birds to a cage cost no more than floor housing, and in many cases the cost is less.

In cages, he continued, you can find the eggs and get them. While it has been shown in some tests that birds in cages lay an egg or so less, he admitted, it has also been proven that hens lay greater number of large, quality eggs — which means more money.

And there are fewer culls when cages are used, he declared. This is true because the birds have feed and water at all times and aren't crowded.

Mortality, too, is a factor in egg production, Mr. McGranahan reminded. The average bird mortality in the U.S. is over 10%, but only about 6% in cages, he revealed.

He admitted that manure and flies are drawbacks in the use of cages, but added that each of these factors can be controlled. He also admitted that feed can be wasted in cages just as it can be in floor management, but that feed wastage is more easily spotted with cages.

Summing up, Mr. McGranahan listed a greater number of large eggs, fewer culls, less mortality and less feed wastage as advantages of cages. "In the final analysis," he declared, "these factors mean a more efficient operation—which means more profit to the operator."

Vertically Integrated Firm

John Fredericks, general manager, Creighton Brothers Poultry Farm, Warsaw, Ind., told of this poultry program—a firm vertically integrated within itself.

Creighton Brothers is a partnership poultry business founded in 1925 by Hobart and Russell Creighton, with approximately 30 acres and 1,500 laying hens near Warsaw, Ind. Today, the business has grown to 15 partners with some 2,000 acres and 175,000 laying hens. Present expansion plans call for enough houses for another 100,000 hens, or a total of 275,000.

The business has grown, Mr. Fredericks said, from capital made within the business, without subsidization from the outside. The goal from the beginning, he added, has been to produce eggs and egg products in the most efficient manner possible, resulting in more profits without raising the cost of the eggs.

Mr. Fredericks, in reviewing the 36-year-old operation, said the business began to integrate soon after starting. In the late 20's, he said, an incubator was purchased to raise chicks, and soon there were enough surplus chicks to sell to neighboring firms. This provided an important outlet for eggs in the spring months when the price of eggs was low, he added.

Breeding, too, entered into the operation. Until three or four years ago, Creighton's would breed its own birds and mate up individual pens. This

was discontinued because Creighton's found it could buy better breeding birds than it could produce, and for less money.

To combat the cost of feed, Creighton's added to its land holdings and, in the early '30's, sparked the Northern Indiana Cooperative Feed Mill. Creighton's was the mill's best customer until 1955, when the business built its own mill.

While adding to its land holdings, Creighton's also was expanding its poultry operations. In 1938, the business reported some 20,000 birds on two different farms and in 13 different houses. By 1941, there were 35,000 birds, and the payroll listed 66 people. In addition to poultry, Creighton was raising wheat, corn, alfalfa, cattle and hogs.

In describing the Creighton Brothers operation, Mr. Fredericks said that in 1960, the firm harvested more than 100,000 bu. of corn from 1,000 acres and sold the corn to its elevator, which has a storage capacity of 300,000 bu. Here, the corn is dried and stored until ready to use, he explained, along with corn purchased at harvest time from neighboring farmers.

The elevator, he said, can mix eight tons of feed in an hour with each of two mixers, and added that the brooding and laying departments are primarily feed customers. Other customers, he pointed out, are the cattle, sheep and hog operation, and a few custom-mix firms. He added that the animals are kept primarily to eat the sweepings from the elevator and the screenings from the corn sheller and cleaner, and to glean the cornfields after the corn is harvested and corncobs from the elevator.

Laying hens, Mr. Fredericks said, are housed in 240 x 70 ft. houses—14,000-15,000 birds to a house. One man is responsible for each house—the birds, the eggs and equipment, and loading the eggs onto the egg truck.

The egg packaging department packs eggs in cartons for direct selling to retailers. Others go to the hatchery, where over 30,000 pullets are hatched each month for the brooding department, which is the hatchery's biggest customer. Baby chicks are also sold to other commercial poultrymen.

The brooding department, which grows the birds which go into the laying house, has 25 brooder houses on five separate farms, with each house having a capacity of 6,000 birds up to 22 weeks of age. A "step down-step up" lighting system is being used to delay sexual maturity. In the past two or three years, Creighton's has sold about as many started pullets as day-old chicks, although the bulk of the birds go to the laying department.

Planned Poultry Program

Keith Duff, president of Duffy, Inc., Traverse City, Mich., explained his firm's planned poultry program in which Duffy provides everything from facilities to markets. The firm does complete service work on everything it sells.

In 1958, the business began with four or five houses and 28,000 birds. Today, said Mr. Duff, the firm services 250,000 layers, has a new building and offices and a new feed mill under construction. In the next three years, Mr. Duff expects his program to reach 1 million birds.

Duffy now has 26 people who do the complete servicing of the 250,000 layers, including financing, building and equipping the houses, making the feed, buying the pullets and disposing of the spent hens, in addition to finding the top market for the eggs to be sold. The company also does the complete service work on everything it sells to the firm's 35 or more producers.

Mr. Duff emphasized that the success of his business was largely due to producers, "who are the most important people the firm works with and the ones it must try to satisfy." Second, he listed good buildings, some with mahogany paneled egg rooms. Third, he advocated good equipment for egg production, and added that his equipment is purchased from top manufacturers to fit specific standards and needs. Fourth, he listed good pullets, which at present include four different strains from seven different hatcheries. Fifth, he said, is good feed. Sixth, is a good egg market.

"You don't have to be a genius to run a successful business," said Mr. Duff, "but rather, one who is smart enough to recognize all the things you know nothing about. Then it is up to you to go out and get specialists in these fields, hire them and make them responsible."

Regarding feed, he said that he was certain "that the company we work with can and does make a dozen eggs on a year-around basis on less pounds of feed than any company in the business." He also mentioned the feed manufacturer's finance plan on birds and technical service.

Mr. Duff emphasized that at all times he sells a program or plan and that in the program "everything we have to sell is the best."

Raising Tips

Dudley Williams of the Amstutz Hatcheries, Winchester, Ind., gave some tips on raising good 16-weekers.

"In our started pullet program, we contract with individual growers rather than owning our own facilities," he revealed. "The growers must be dependable enough so that we know our program will be followed; they must have a good knowledge of poultry husbandry and be ambitious, and they must provide the proper type of housing and equipment."

The type litter used will vary according to what is available, said Mr. Williams, although crushed cobs or shavings are preferred. A chick guard is used to hold the chicks near the brooders for the first four or five days to prevent crowding and loss from smothering, he added.

Water in two-quart jars or a one-gallon jar is provided for each 100 chicks, with lukewarm water supplied to the birds debeaked the first day. Cardboard feeder flats are used

(Turn to MICHIGAN, page 119)

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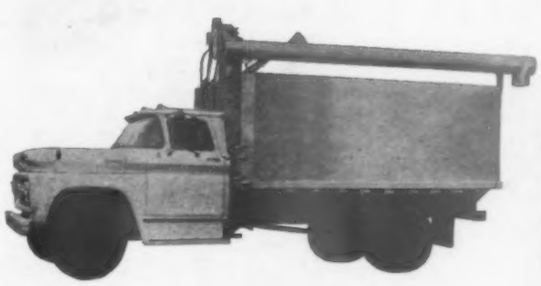

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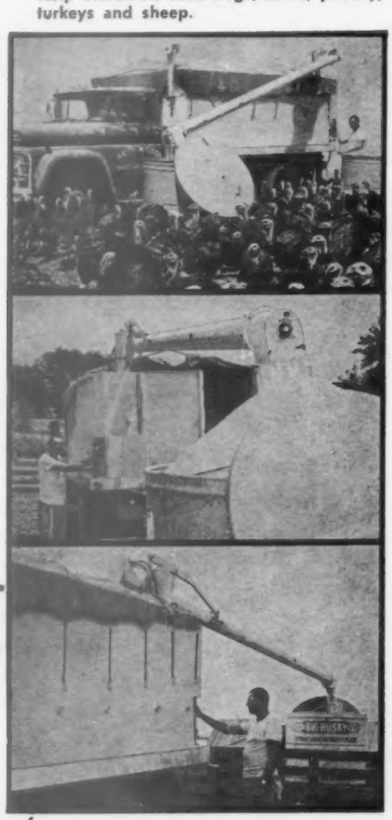

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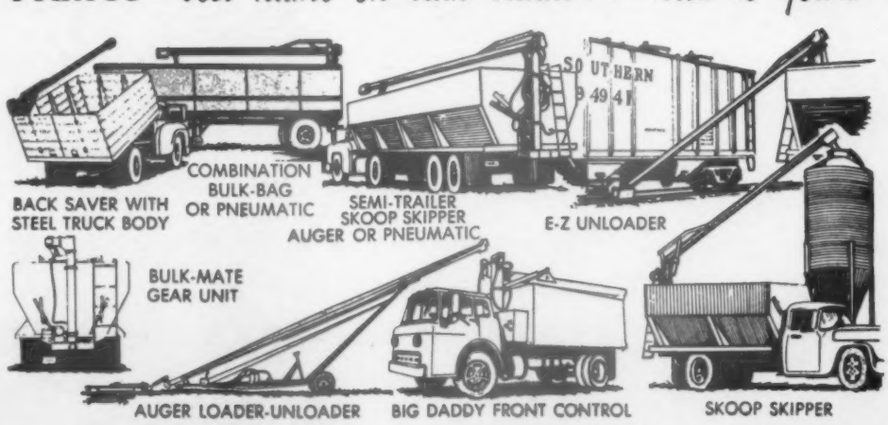

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RICH IN VITAMIN D FOR FOUR FOOTED ANIMALS

Are all dicalcium phosphates alike?

...not by a long shot!

Chemical solubility and biological feeding tests conducted by independent research laboratories have proved that "all defluorinated phosphates are not alike."

But are all dicalcium phosphates alike?

A comprehensive chemical and physical analytical study of Smith-Douglass DIKAL and two competitive products was recently concluded by Cox and Gillespie, Chemists and Chemical Engineers, Richmond, Va. Their report, covering analyses and comments, follows:

Comments by Cox and Gillespie

1) DIKAL as compared to Sample A:

a) The relatively high magnesia content of Sample A (3.56%) resulting in high magnesium phosphate and magnesium carbonate is not thought to be due to impurities in limestone, but to other magnesia which has been added to raise the phosphorus solubility. Unreacted calcium carbonate and magnesium carbonate are high.

b) DIKAL has a higher dicalcium phosphate content.

c) DIKAL has a lower apatitic phosphate content. Apatitic phosphates are highly insoluble.

d) DIKAL has a higher total phosphorus (phosphate) content.

e) The phosphate in DIKAL is more soluble.

f) The titration curve shows DIKAL to be buffered—therefore will retain its solubility.

g) DIKAL is "not loaded" with magnesia—its solubility is due to chemical processing. It contains very limited amounts of unreacted limestone or magnesia.

h) DIKAL is more uniform in granulation and it has a granule hardness more resistant to abrasion.

2) DIKAL as compared to Sample B:

a) Sample B has a high aluminum phosphate (6.44%) and an iron phosphate above that of DIKAL. The unreacted limestone (calcium carbonate) is much higher (10%). The total *calcium phosphates* (mono and di-) are much lower than DIKAL—62% in comparison with 71%. The apatitic content is higher.

b) Irrespective of the unfavorable chemical comparison between sample B and DIKAL—the physical comparison is more so. In every respect, Sample B is inferior . . . including an off color and odor. The acid insoluble shows much carbon.

c) The physical advantages of DIKAL are most apparent—odor, free flowing, hardness of granule, uniformity of particle.

d) DIKAL has a higher di-calcium phosphate content, is more soluble, has lower apatitic phosphate, and a higher total phosphorus and calcium.

e) DIKAL is lower in the impurity iron phosphate, and much lower in aluminum phosphate.

f) DIKAL is substantially lower in unreacted "limestone."

g) DIKAL has less "free carbon"—shown by color and acid insoluble.

In conclusion, DIKAL is significantly more soluble than competitive products tested. Conversely, DIKAL has one-third to one-half less insoluble phosphate.

Samples represent commercially available products and are designated in the same manner as in the recently published "Phosphorus Availabilities as determined by Assays conducted by the Lime Crest Research Laboratory, Newton, New Jersey" (copies available upon request).

	Competitive dicalcium phosphate A (produced from "electric furnace" phosphoric acid)	Competitive dicalcium phosphate B (produced from "wet process" phosphoric acid)	Smith-Douglass DIKAL
Dicalcium Phosphate, $CaHPO_4$	49.78%	49.43%	63.57%
Monocalcium Phosphate $Ca(H_2PO_4)_2$	9.68	12.51	7.33
Apatitic Calcium Phosphate*	1.31	1.07	.41
Calcium Carbonate $CaCO_3$	17.68	9.78	5.73
Magnesium Phosphate $Mg(H_2PO_4)_2$	13.46	4.09	3.98
Aluminum Phosphate $AlPO_4$	.02	6.44	2.54
Iron Phosphate (Ferric) $FePO_4$	.04	5.44	4.35
Disodium Phosphate NaH_2PO_4	Trace	.41	1.64
Magnesium Carbonate $MgCO_3$	2.29	.34	.18
Calcium Sulfate $CaSO_4$ $2H_2O$	Trace	7.16	7.07
Sodium Fluosilicate Na_2SiF_6	None	.03	.26
Calcium Fluoride CaF_2	.06	None	None
Sodium Chloride, NaCl	None	None	.04
Free Phosphoric Acid	.14	.12	.16
Unreacted Silica and Carbon	1.08	.70	1.21
Moisture and Water of Crystallization**	4.46	2.48	1.53
	100.00	100.00	100.00

*Apatite content is arbitrary and approximate.
**Water of crystallization is by difference.

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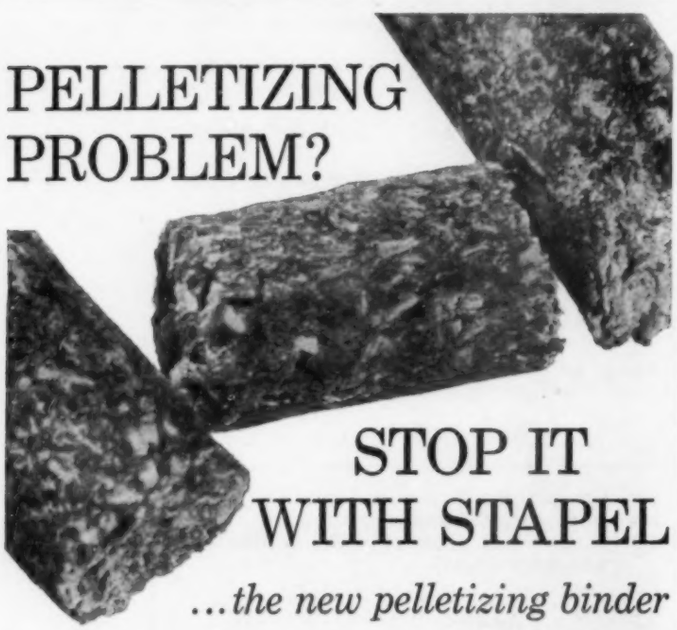

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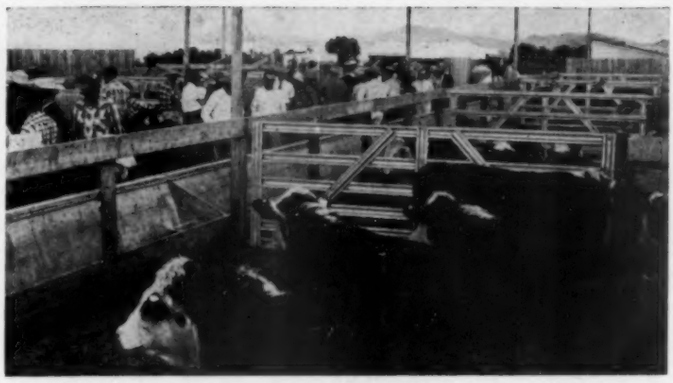

FEEDERS DAY TOUR—Cattlemen who attended Montana State College's recent Feeders Day program tour feedlot facilities to see 12 lots of cattle on test.

Cattle Wintering and Fattening Reports Heard at Montana Event

By DR. O. O. THOMAS
Montana State College

BOZEMAN, MONT. — Reports on cattle wintering and fattening were presented in the sixth annual Cattle Feeders Day held recently at Montana State College. Approximately 100 visitors saw three tests of cattle being fattened on high concentrate rations, some without hay. Reports were presented by Dr. O. O. Thomas, Fred S. Willson, Claude Windecker, Gary Cowman and Lyle Myers. A summary of the reports is a follows:

- Cows fed extra phosphorus in a supplement with either 20, 30 or 40% protein produced calves which weighed 15 lb. heavier at weaning.
- Vitamin A was recommended to be fed at levels of 6 mg. of carotene or 3,000 I.U. of vitamin A per hundred pounds of body weight to pregnant cows and cattle being fattened.
- Safflower meal fortified with calcium and vitamin A was equal to a 20% protein supplement with the same fortification as a supplement to a high-barley fattening ration.
- Mono- and diammonium phosphate appeared to be satisfactory as sources of nitrogen and phosphorus in a wintering and fattening trial.
- Cattle fed 2 lb. of hay with steam-rolled barley gained faster than those fed no hay or 6 lb. of hay.
- Steam-rolled barley gave slightly better gains than dry rolled barley in a fattening ration.
- Steers from an IPR performance tested herd gained 0.4 lb. faster in the feedlot than steers of similar quality obtained from commercial auction.

PHOSPHORUS IN SUPPLEMENTS FED COWS ON WINTER RANGE—During a three-year experiment, cows were fed no supplement or one containing 20, 30 or 40% protein with and without additional phosphorus added. Cows fed a supplement with 1.5% phosphorus, with any of the protein levels, produced calves 15 pounds heavier at weaning than calves produced from cows which received supplements containing about 0.7% phosphorus. The level of protein did not affect birth or weaning weights; however, cows fed the higher levels of protein in the supplements tended to gain more weight or lose less weight during the winter period.

RECOMMENDATIONS FOR VITAMIN A SUPPLEMENTATION—The current recommendations for carotene and vitamin A and the relationship of carotene to vitamin A in recent experimental trials were reviewed. It was stated that calculation of supplemental vitamin A needed to meet daily requirements must be based upon consideration of the daily intake of carotene from hay or silage and upon liver storage of vitamin A. Because many high-concentrate fattening rations fed today include only a small amount or no roughage, all daily requirements may have to come from supplemental sources.

Little vitamin A storage may result from an intake of 10,000 I.U. per day; so cattle feeders may need to feed from 20,000 to 30,000 I.U. of vitamin A per day. An intake of 6 mg. of carotene or 3,000 I.U. of vitamin A per 100 lb. of body weight should meet daily requirements and provide some storage. Stabilized vitamin A in commercial protein supplements or dehydrated alfalfa can be used to supply requirements of vitamin A or carotene.

SAFFLOWER AS A PROTEIN SUPPLEMENT IN HIGH CONCENTRATE RATIONS—The production of safflower meal is increasing in Montana. A recent test with the Kyd Cattle Co., Three Forks, Mont., indicated that safflower meal fortified with calcium and vitamin A was equal to a 20% protein supplement with the same fortification. Eight lots of 50 head of Hereford steers were used in the test with four lots receiving 1 lb. per day of the safflower-based supplement and four lots receiving the mixed protein based 20% protein supplement.

The 200 steers fed the safflower pellet gained 2.43 lb. per day as compared to a gain of 2.44 lb. per day for steers fed the mixed protein supplement. In addition to the supplement, the average daily consumption of cattle was 3.5 lb. of chopped alfalfa hay and 18.5 lb. of steam rolled barley.

MONO- AND DIAMMONIUM PHOSPHATE AS A SOURCE OF NITROGEN AND PHOSPHORUS FOR WINTERING AND FATTENING STEERS—Of considerable interest to cattle feeders was a test in which mono- and diammonium phosphate were used as sources of nitrogen and phosphorus in an 18% protein supplement fed to steers during

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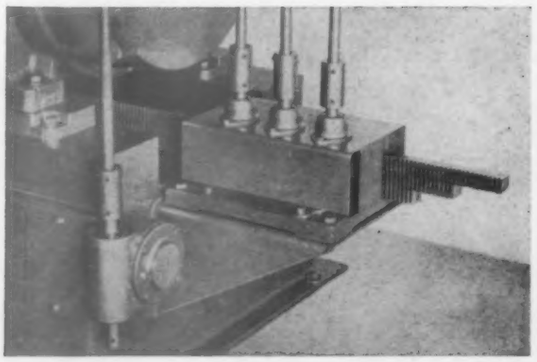

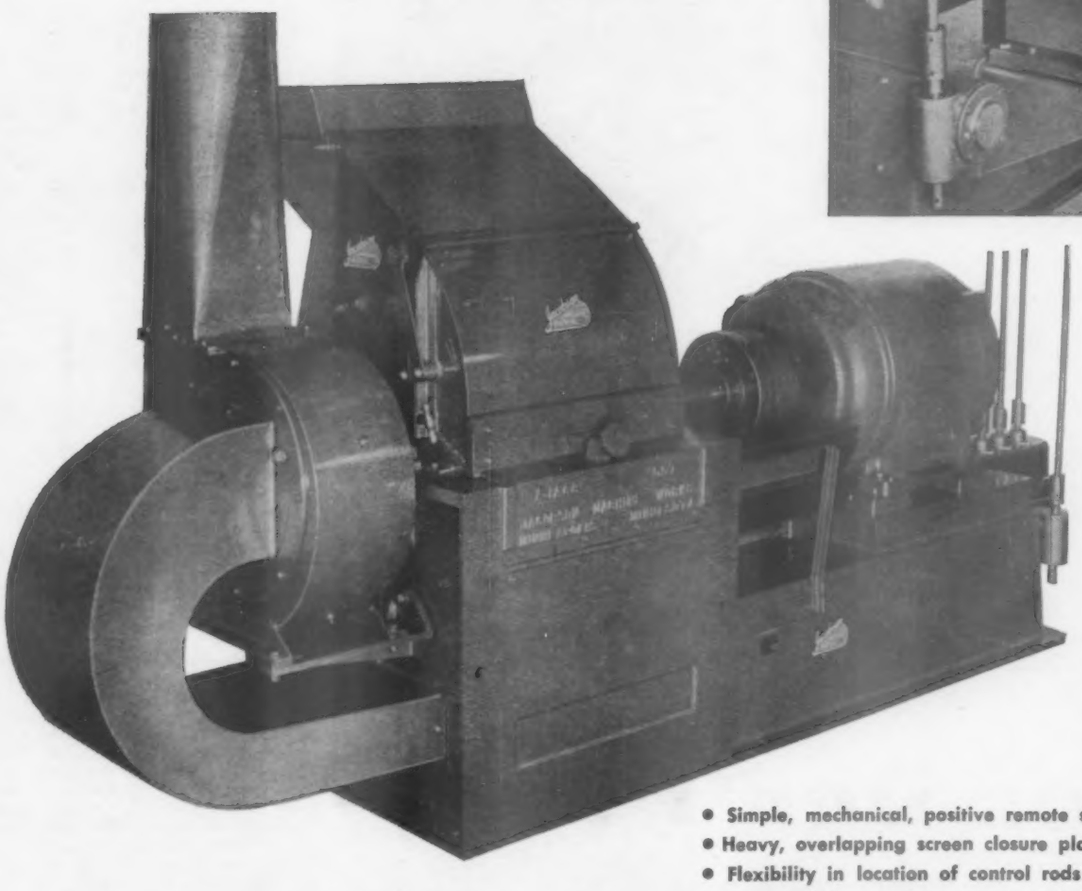

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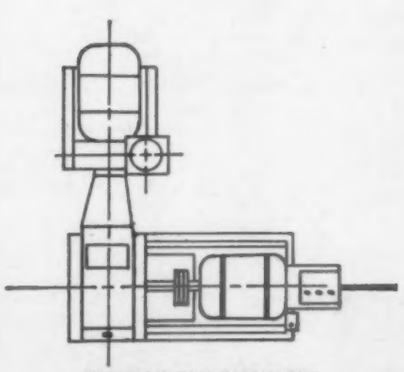

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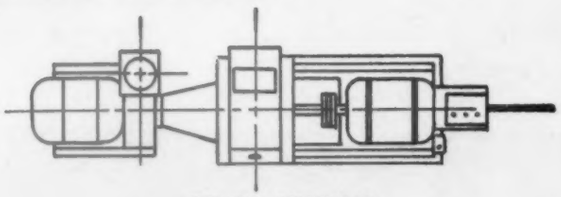

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PUBLIC RELATIONS AWARDS—At a recent meeting in Minneapolis of the public relations committee of the American Feed Manufacturers Assn., plaques were presented to two previous committee chairmen for their roles of leadership and contributions to feed industry public relations. Shown in the photo above, left to right, are: W. E. Glennon, AFMA president, Chicago; John L. Schlick, chairman of the committee and director of public relations, Murphy Products Co., Burlington, Wis.; William R. Pearce, assistant vice president, public relations, Cargill, Inc., Minneapolis, and chairman of the committee last year, Dr. J. L. Krider, director of public relations, Central Soya, Ft. Wayne, Ind., and chairman of the committee, 1958-60, and R. L. Kathe, AFMA director of public relations, Chicago.

a wintering and fattening trial. The other two treatments utilized soybean meal and urea as nitrogen sources and defluorinated phosphate as a phosphorus source.

In the wintering trial, the steers were fed 1 lb. of the supplement with about 1.5 lb. each of barley and beet pulp and 6 lb. of grass hay. Steers fed diammonium phosphate gained slightly faster than steers fed other supplements.

During the 168-day fattening trial, the steers were self-fed a ration of 80% steam-rolled barley with molasses added and 20% dried molasses beet pulp. The supplement was added to this mixture so that the daily intake of the supplement would be about 1 lb. Hay was removed from the ration after the first 28 days.

The final average daily gains were as follows: Soybean supplemented, 3.07 lb.; urea supplemented, 2.97 lb.; diammonium supplemented, 2.95 lb., and monoammonium supplemented, 2.81 lb. gain per head per day. Feed required per 100 lb. gain ranged from 628 to 676 lb. Six or more of the eight steers in each lot graded choice.

LEVELS OF HAY IN CATTLE FATTENING RATIONS—Two trials were conducted in which cattle were fed 6, 2 and 0 pounds of hay per day with a full feed of steam-rolled barley and 2 lb. of a 20% protein supplement; an additional lot was fed 2 lb. of hay with dry rolled barley. In the first trial, yearling Hereford steers weighing 850 lb. were fed 140 days. Steers fed either steam-rolled barley or dry-rolled barley with 2 lb. of hay gained 2.5 lb. per head per day, whereas steers fed no hay gained 2.37 lb., and those fed 6 lb. of hay gained 2.17 lb. per head per day. A preliminary report of steer gains in the second trial indicates that those steers receiving no hay are gaining at a faster rate than steers fed 2 lb. per day.

STEAM VS. DRY-ROLLED BARLEY FOR FATTENING CATTLE—The objective of this test was to compare the value of steam-rolled barley, steam-rolled barley with molasses added, and dry-rolled barley in cattle fattening rations. A commercial product, Cellu-ade, was added to the supplement of one group of steers fed steam-rolled barley with molasses added.

During an 84-day wintering trial, in which all steers were fed the same amount of feed—3.5 lb. barley, 2 lb. of a 20% protein supplement, and 8 lb. of hay—all steers gained at about the same rate of 1.75 lb. per head per day. During the 179-day fattening period, the steers were fed all the barley they would consume; steers fed steam-rolled barley had the greatest consumption. Steers fed steam-rolled barley gained 2.57 lb. per head per day, whereas steers fed dry-rolled barley gained 2.39 lb. The addition of molasses to steam-rolled barley did not increase gains as steers gained 2.42 lb. per head per day. The addition of Cellu-ade increased gains slightly; steers fed Cellu-ade gained 2.46 lb. per day. Two steers were removed from the trial because of bloat — one steer fed steam-rolled barley with molasses and one steer fed dry-rolled barley.

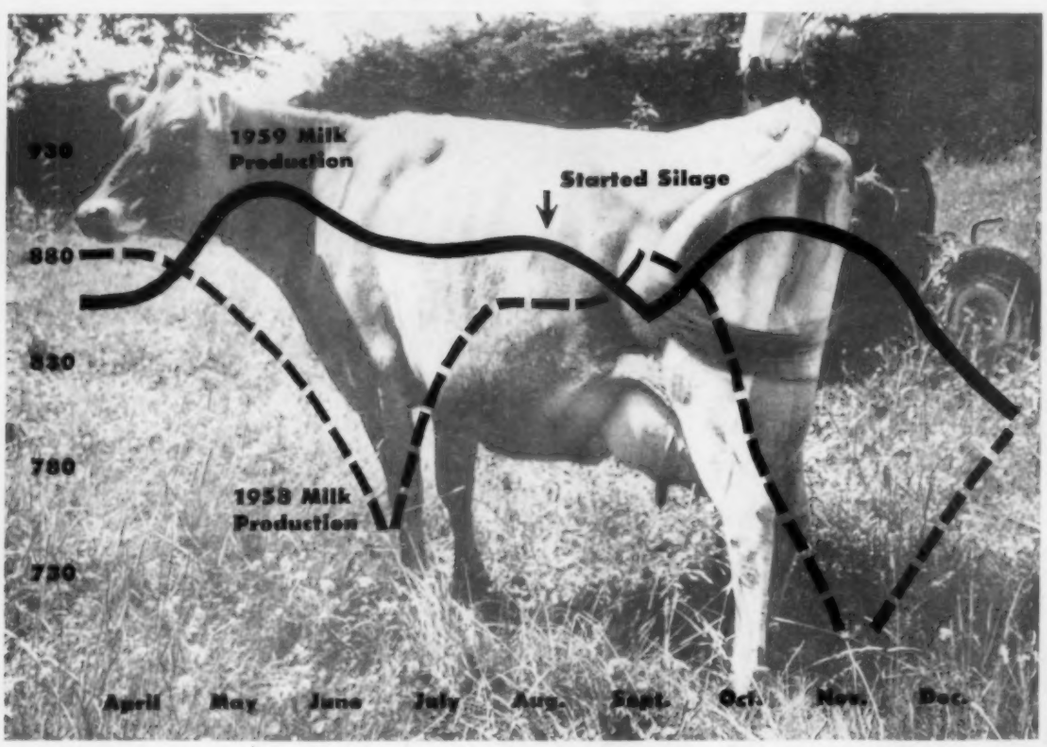
STEERS FROM GAIN-TESTED BULLS GAIN FASTER — Two reports were presented on results of feeding gain-tested steers and steers from herds where IPR (Individual Performance Record) bulls were not used. In most tests, gains were greater for steers from gain-tested herds. In one experiment, 20 head of steers were obtained from a rancher using IPR bulls. These calves gained 2.87 lb. per head per day as compared to a gain of 2.47 lb. per day for 20 steers of similar quality but from a herd where IPR bulls were not used.

Visitors at the Feeders Day toured the feedlot facilities and saw 12 lots of cattle on test. At the conclusion of the tour, a demonstration was conducted by N. A. Jacobsen, extension livestock specialist, on proper weights and grades of cattle to select for a particular cattle fattening program.

Central Soya Dividend

FT. WAYNE, IND.—Directors of Central Soya have declared a quarterly cash dividend of 27½¢ per share on the capital stock of the company, according to Harold W. McMillan, chairman of the board.

The dividend is payable on the capital stock of the company Nov. 15 to stockholders of record at the close of business Oct. 27. This is the first quarterly dividend of the current fiscal year and a continuation of the firm's record of cash dividends, which has been uninterrupted since 1942, Mr. McMillan pointed out.



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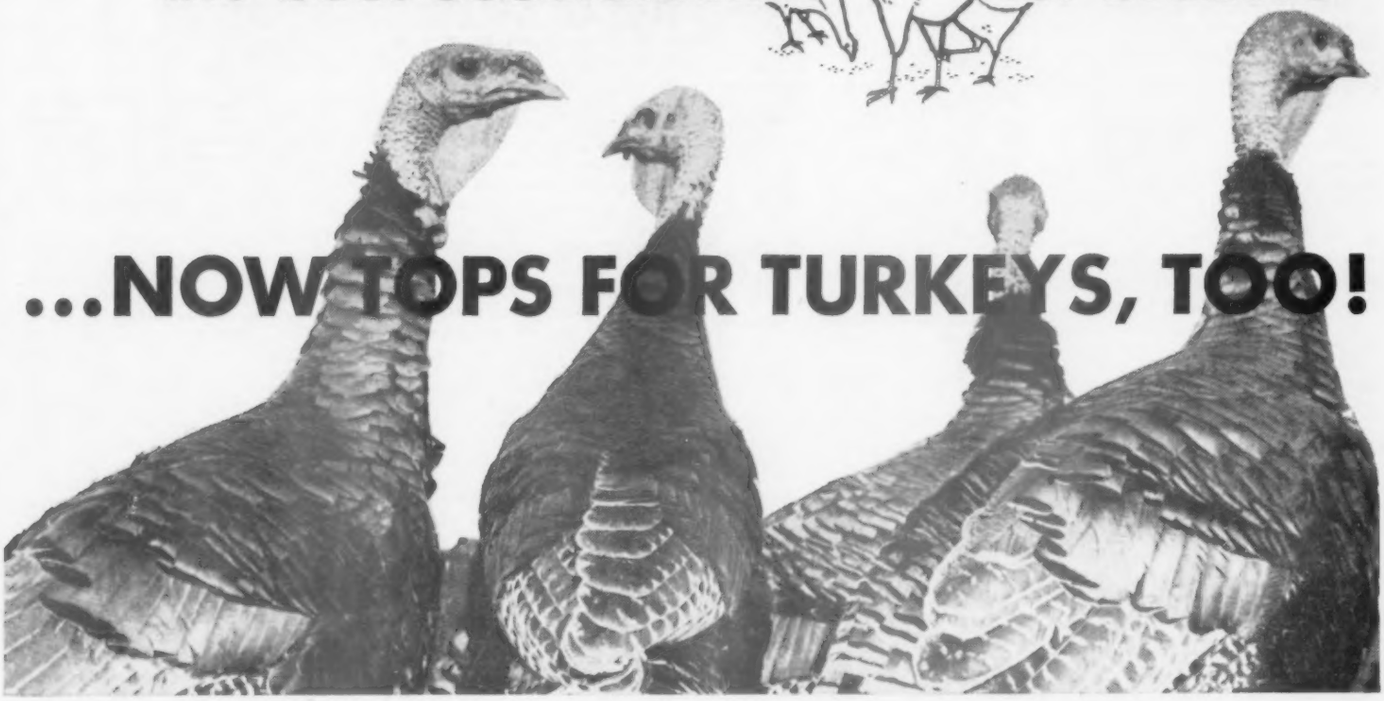

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Summary of Arkansas Nutrition Research

By Marie L. Lavallard
Editor, Agricultural Publications

ARKANSAS RESEARCHERS—Studies of poultry, beef cattle, swine and sheep nutrition are the responsibility of these scientists at the University of Arkansas, they are (from left): Dr. Paul R. Noland; Dr. K. W. Scott and Dr. E. L. Stephenson. Dr. M. L. Ray, not pictured, is another Arkansas scientist whose work is summarized in the report on this page.

Research covering the nutrition of poultry, beef cattle, dairy cattle, swine and sheep is being carried out at the University of Arkansas Agricultural Experiment Station by seven members of the animal husbandry staff under the direction of Dr. Warren Gifford, department head.

These scientists are:

Dr. E. L. Stephenson, poultry nutritionist; Dr. Paul Noland, animal husbandman; Dr. O. T. Stallcup, dairy husbandman; Dr. M. L. Ray, animal husbandman; Dr. O. H. Horton, associate dairy husbandman; Dr. K. W. Scott, associate animal husbandman, and Dr. H. W. Colvin, Jr., assistant dairy husbandman.

Poultry Nutrition

Dr. Stephenson is involved with almost all the poultry nutrition research at the Arkansas experiment station. This work includes research in both chicken and turkey nutrition.

At present, Dr. Stephenson is studying amino acid relationships in young chickens and growing turkeys. The research includes the determination of requirements for amino acids and the relation of amino acids to each other as well as their relation to energy.

Currently working with methionine, lysine, glycine and arginine. Dr. Stephenson plans to expand his studies to include others.

So far, a line graph has been worked up to show all amino acids in relation to each other as well as to energy content. This particular work and that planned in the future is designed to obtain basic information necessary before an electronic computer can be used for feed formulation.

The graph will at present provide a diet that will produce a 3-lb. bird in a little over six weeks.

Other projects in poultry nutrition deal with unidentified dietary factors required to improve diets composed primarily of ingredients locally available. These studies include fish factor(s) as well as the effect of pelleting on locally acquired ingredients.

Research has already been completed on the inorganic part of the fish factor. These results suggest that the fish factor may be a complex containing copper and molybdenum. Since this is apparently an inorganic factor, future work will be concerned with finding the organic factor.

Other future research will include attempts to improve the line graph of amino acids for both young and adult chickens and turkeys.

Swine Nutrition

Working on swine nutrition research are Dr. Noland and Dr. Scott. One study involves work with antibiotics, feed additives, and hormones, as well as utilization by swine of basic nutrients. It also involves trying to find the value of cooked, full-fat soybeans in swine rations. Particular emphasis is being placed on the nutrition of the baby pig and the gestating sow. Categorically, the study includes a study of protein-energy ratios for swine, nutritional requirements of the gestating sow, limited nutrient intake of bred stock, action or efficiency of creep rations of the young pig, and the effect of amino acid supplementation.

In some of the work, nitrogen retention and digestion studies are used to obtain some answers.

Indications as a result of research completed so far are that protein can be replaced in growing and finishing swine rations with cooked, full-fat soybeans.

Future work in this area will include additional studies on amino acid supplementation, the refinement of nutritional requirements for gestating females, and a search for and testing of more efficient creep rations for baby pigs.

Roundworm Study

In his study of the roundworm effect on growing pig nutrition, Dr. Scott is checking various feed additives for efficacy in controlling roundworm infestations. Both artificial and natural infections are being studied as to their effect on utilization of nutrients and on growth. "At present, no drug is effective in controlling roundworm throughout all stages of its life cycle," Dr. Scott reports.

In the future, Dr. Scott plans to use both artificially embryonated ova and contaminated field infections in trials with antihelminthic agents.

In a study using the carcasses of slaughtered pigs, it has been shown that rice bran can be substituted for 40% of the total ration without obtaining soft fat. In many cases this can mean much to the operator economically because frequently rice bran can be obtained more cheaply than corn.

Sheep nutrition research at the Arkansas Experiment Station is being carried out by Dr. Noland. At present, he is studying the development of economical rations for use during the gestation period, and how these rations compare with winter small grains. Also, high energy rations for lambs in creep are being studied. More research is being done on the use of chicken litter and sorghum grains in feeder lamb rations.

In the studies, Dr. Noland has been using lambs having rumen fistulas and adding small amounts of amino acids in studying the effect of amino acids on ammonia production and the production of other metabolites in the rumen.

Additional research is being done on the use of winter small grain pastures as a source of nutrition for feeder lambs; and on screening hays from different parts of Arkansas for trace mineral deficiencies.

Sheep and lambs are being studied in an effort to control infestation by parasites. This problem is being studied in feeder lambs as well as in breeding stock.

Additional work is planned in the feeding of rice bran and rice hulls to lambs. There are indications that as a result of parboiling the rice, a chemical change takes place in the rice hull and bran that makes the rice more nutritious.

Dr. Noland feels that 50% of the research he is doing with pigs and lambs has immediate application while the remainder is in the area of fundamental research.

Dairy Research

Some nutrition research in dairying is being carried out by Dr. Horton and covers the development of baby calves and heifers. So far, no advantage has been found in feeding more than four times a day. Some improvement was noted, however, when feeding was between two and three times a day. In addition to milk fed automatically, the ration in this study consists of a 16% protein-grain mixture and hay fed ad libitum.

Other research in dairy nutrition concerns baby calves. This project entails feeding colostrum to calves for extended periods. Normally, it is fed the first three or four days; then the calf goes on whole milk. The study involves trying to find some good use for colostrum.

So far, no ill effects have been found from this feeding, but at the same time, no definite advantages have been noted either. Use of colostrum for extended periods does, however, free whole milk for human consumption.

Plans for the future include continuation of colostrum feeding. Also, a project scheduled to start immediately will test passage of hay and other items through the digestive system of the calf. In this study, the differences in rates of passage of good and poor quality rations through the digestive system will be studied.

Additional dairy nutrition research is being carried out by Dr. Stallcup and Dr. Colvin. The two are working on a project concerned with the study of seasonal differences in milk production. They feel that decline of milk production in the winter is not so much directly attributable to the change in climate. The idea is to see whether seasonal effect on milk production is due to temperature change or to reduction of dry matter intake because of its decrease in availability in the spring and summer months.

According to production, a constant ration of hay and grain is fed to one group of dairy cattle while the green-chop ration is fed to another group in season. This is done to check the influence of the diet on the composition of rumen ingesta and ultimately the composition of milk.

The two scientists are also studying the influence of various materials on rumen development and intermediary metabolism in calves.

Future plans call for continued study on this project and a follow-up of leads developed from the results. Some studies in the area of the influence of diets on rumen motility are planned, also.

Amino Acid Metabolism

Dr. Stallcup is also making a study of the metabolism of amino acids by fistulated steers. At present, he is feeding amino acids as the only source of nitrogen in the diet and in ammonia production. Here, the level of protein and of non-protein in the rumen liquor is determined. Cottonseed meal, soybean oil meal and linseed oil meal are being studied in comparison with urea. Results showed that higher protein levels were associated with the feeding of soybean oil meal. Higher ammonia production resulted with urea.

A study is being initiated to determine why nitrogen in the stalks of sorghum and corn plants is unavailable to the animal. Also, studies of the basic differences in components of fiber fractions of various roughages and concentrates are being carried out, along wth the buffering capacity of various forages and its influence on rumen pH.

Additional studies are planned on the influence of stage of maturity of various pasture and forage plants grown in northwest Arkansas. Already, work is complete on oat forage and more is in progress on sudan grass and sorghum plants.

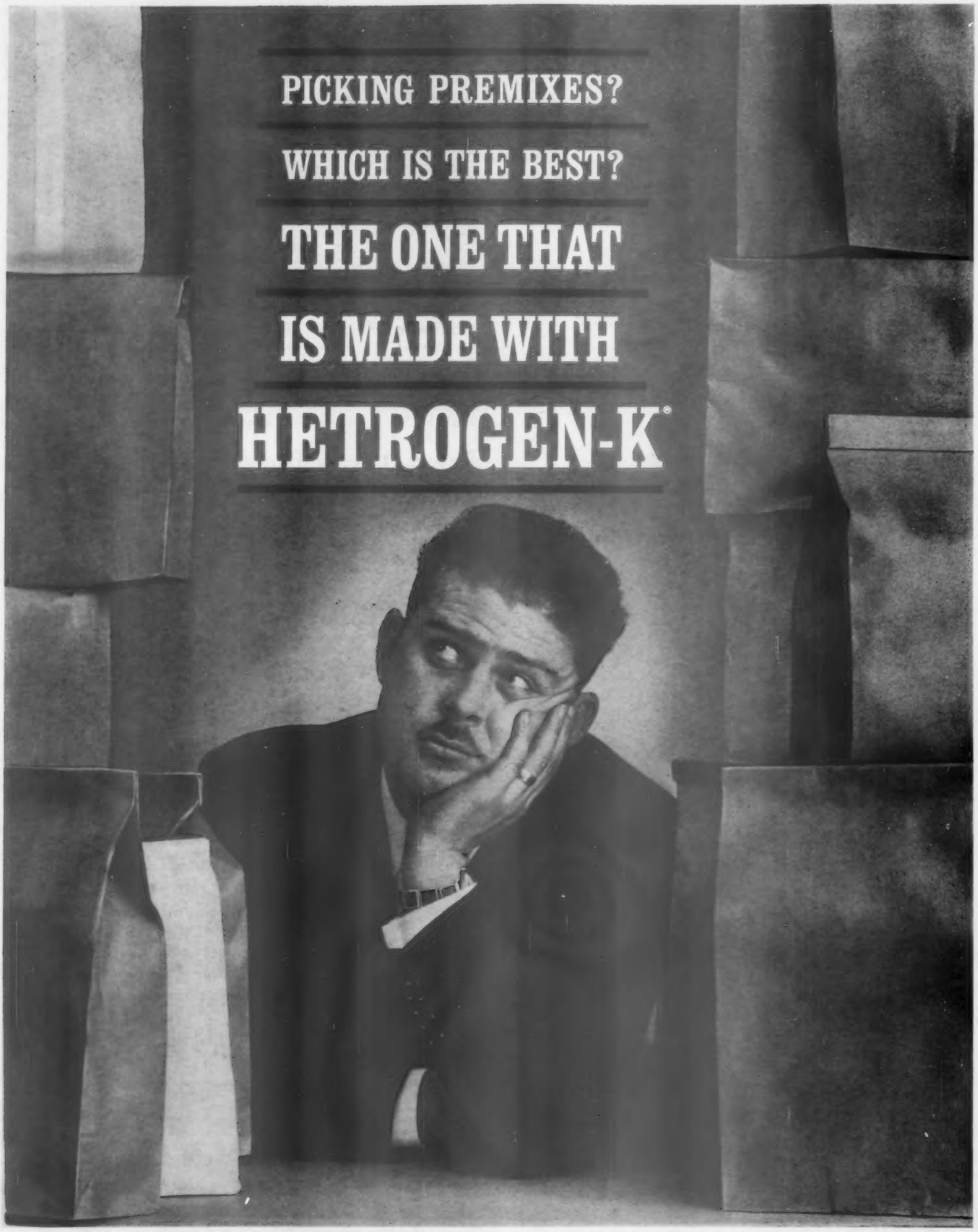
Beef Cattle Research

The majority of the research in beef cattle is being carried out by Dr. M. L. Ray. Through a number of projects, Dr. Ray is studying cow and calf nutrition management problems, the effects of methods of preparation and storage on preference and digestibility of beef cattle feeds, the systems of finishing beef animals on

Centennial Nutrition Report from:

University of Arkansas

DAIRY SCIENTISTS—Dairy nutrition research is conducted at the University of Arkansas, Fayetteville, by (from left): Dr. O. T. Stallcup, Dr. Harry W. Colvin, Jr., and Dr. O. H. Horton.



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feed crops adapted to the delta section of Arkansas, feeder and slaughter calf production as affected by cow quality and herd management, and methods of improving digestion and utilization by beef cattle of roughages produced in the South.

In the cow-calf nutrition management studies, Dr. Ray is attempting to determine the relationship of protein and mineral needs of beef cows and calves to different levels of grazing intensity; and to determine the proper management for adapted forage species to provide year-round optimum nutrition for beef cow and calf.

In the preparation and storage studies, Dr. Ray is trying to determine the chemical and physical changes in feed resulting from methods of preparation and storage, and their effect on preference and digestibility of commonly fed grains and roughages. Also, he wants to find the effects of particle size and pelleting on preference and digestibility of commonly fed roughages. Finally, he wants to evaluate the effects of methods of feed preparation on preference and digestibility as related to intake of grains and efficiency of feed utilization.

Studying feed crops of the Arkansas delta, Dr. Ray wants to determine the value of such crops as rice, grain, corn, cottonseed, and others on beef finishing, as well as determining the various systems of feeding and management designed to obtain most profitable utilization of adapted feed and forage crops under delta conditions.

In the future, Dr. Ray plans to continue most of these studies, some of which are just under way. Additional feed studies will be carried out, such as the effects of wintering systems on summer gains in the pasture and the feedlot. Further studies are planned on management of roughage portions of cattle rations.

OREGON OFFICERS—The newly-elected president of the Oregon Turkey Improvement Assn. and the retiring president got together with the Oregon group's secretary and executive secretary of the National Turkey Federation. From left, are: Noel Bennion, Oregon State University, secretary of the Oregon Turkey Improvement Assn.; Wally Sawtell, Molalla, newly-elected president; Walt Hilands, Portland, retiring president, and M. C. Small, Mt. Morris, Ill., executive secretary of the National Turkey Federation.

Fewer, Larger Breeders Predicted for Turkey Industry at Oregon Meeting

CORVALLIS, ORE.—"It looks as if the turkey breeding program will follow a pattern similar to that of the poultry industry," commented Noel Bennion, extension poultry specialist, Oregon State University, at the meeting of the Oregon Turkey Improvement Assn. here.

"This means that more and more of our hatching eggs and poults will be produced by comparatively few large breeders or corporations." He indicated that in the future the supplier of hatching eggs and poults will have to be in a position to bid on large volume orders to stay in business. "This means the independent breeders will have to have a tie-in program to find a sale for their hatching eggs and poults," said Mr. Bennion.

Included in Mr. Bennion's audience were 150 turkey growers, Gobblets (ladies auxiliary members) and allied industry representatives attending the 22nd annual meeting of the Oregon Turkey Improvement Assn.

A panel discussion—"What's New in Turkey Reproduction?"—was led by Dick Miller, McMinnville, a director and past president of the association.

Reproduction Discussion

Some of the comments of panel participants follow:

Dr. J. E. Parker, head of Oregon State University poultry department, stated that the reproductive performance of turkeys involves fertility and hatchability of fertile eggs. Since these components of the fertility complex are not affected by the same conditions, the producer must determine first whether his problem is with fertility or with hatchability.

Factors affecting both fertility and hatchability as well as suggestions for improvement of fertility by artificial insemination were discussed.

J. A. Harper, Oregon State University poultry department, said Oregon turkey breeders have made great strides in the development of the size, conformation and feed efficiency of various strains of turkeys during the past 20 years. At the same time, there has been some loss in the reproductive efficiency. Inheritance

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studies at the Oregon Agricultural Experiment Station with turkeys during the past three years show selection for high reproduction qualities tends to reduce body weight and breast width. Because of the negative relationship between traits, turkey breeders need to be aware of the consequences of selection aimed only in the direction of increased size and breast width, Mr. Harper said.

Dr. G. H. Arscott, Oregon State University poultry department, stated that investigations conducted over the past six-seven years have clearly demonstrated that in addition to vitamin A, D and riboflavin such vitamins as pantothenic acid, folacin and vitamin E are now required in breeder rations in amounts above those normally supplied by feedstuffs for optimum fertility and hatchability.

Dr. E. M. Dickinson, head, Oregon State University veterinary department, stated that fertility and hatchability may be reduced by many infectious diseases. Since treatment for disease is done to make the best of an already bad situation, the turkey industry should place more emphasis on management practices to prevent disease, he commented.

M. C. Small, executive secretary of the National Turkey Federation, discussed how the 1961 farm bill may or may not affect the turkey industry. He reviewed the answers to 26 questions on how the 1961 farm bill may affect the turkey industry. He stated that the Agricultural Act of 1961 adds turkeys and turkey hatching eggs to the list of commodities eligible for marketing orders under the Agricultural Marketing Agreement Act. of 1937. He said the final legislation for turkeys is not exactly what anyone in the industry wanted. He pointed out that it is not what the National Turkey Federation wanted in the bill it sponsored for a turkey enabling act and that it is not what the administration wanted in its proposed omnibus bill to provide a farm program for 1961.

Mr. Small emphasized that the present legislation does not provide quotas or price supports. He said the crop would be controlled by set asides of hatching eggs or market turkeys at the handler level which would be hatcherymen or processors, or both.

The headline speaker of the convention was Oregon's Sen. Wayne L. Morse, who spoke on the world situation.

Sen. Morse also met with the Oregon Turkey Improvement Assn. feed grain committee. This committee had prepared a detailed brief with exhibits for Sen. Morse to use in attempting to relieve the tight and high cost feed situation in the Pacific Northwest, OTIA's annôuncement said.

Officers Elected

Wally Sawtell, Molalla, was elected president at the group's business meeting. The new directors elected were: A. C. Camp, Sheridan, and Joe Baggett, Hermiston. Cliff Wrolstad, Molalla, and Milton Newport, Tangent, were reelected.

The carry-over directors were Walt Hilands, Portland; Dick Miller, McMinnville, and Wally Sawtell, Molalla.

Mrs. Charles Evers, McMinnville, was elected president of the Gobblets. Mrs. Cliff Wrolstad, Molalla, is vice president, and Mrs. Harvey Stoller, Lafayette, is secretary.

Virus Possible Link to Shipping Fever Causes

URBANA, ILL.—The discovery of "para-influenza 3" may be another step in solving the mystery of what causes shipping fever, Dr. George Woods, University of Illinois veterinarian, told conferees attending the second annual Conference on Zoonoses. The two-day meeting was held at Allerton Park in Monticello.

Para-influenza 3 is a virus that has been isolated from cattle with shipping fever. This virus is similar to a virus isolated from children with respiratory disease, Dr. Woods said. However, scientists are not sure whether para-influenza 3 is zoonotic, that is, whether infected cattle can infect people or vice versa.

"Antibodies have been found in about 70-90% of mature cattle from widespread areas in the U.S.," Dr. Woods said. Antibodies provide a built-in resistance to disease.

Cows that have been infected with shipping fever pass antibodies on to their calves via the colostrum, the cow's first milk. These antibodies persist for several months in some calves, Dr. Woods said.

Antibodies are also produced through vaccines. Dr. Woods said, "Calves vaccinated a few days before weaning have shown antibodies that persist during the critical period of exposure and stress following weaning and shipment."

Para-influenza 3 has not been present in all cases of shipping fever, Dr. Woods said. If the virus is not accompanied by certain bacteria or stress, it may not cause significant symptoms of shipping fever.

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UP OR DOWN

By Dr. Leonard W. Schruben, Agricultural Economist, Kansas State College

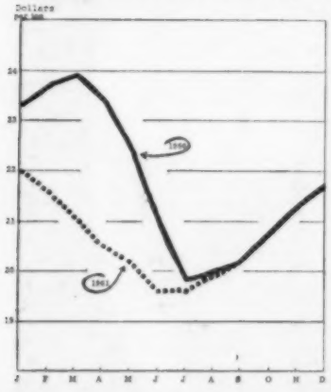
Alfalfa Price Patterns

There is a very strong seasonal tendency for the price of hay to advance from the fall months into the winter. This is especially true for alfalfa hay. To give you some idea as to how prices this year compare with a year earlier, Exhibit 1 has been prepared. You will note that prices this year have been generally well below those last year. Some improvement has been noted recently. The prices we are reporting here are at mid-month as reported by the U.S. Department of Agriculture.

Except for the Northern Plains where drouth has hit hard, hay supplies for the coming feed season appear to be adequate. Total production of all kinds of hay in the U.S. is smaller than in 1960 but still slightly above average. Pastures have been in better shape this fall than average except in the drouth area. As a result, hay supplies have been stretched so that it does not appear that much of a shortage will exist in most areas.

Hay supplies appear to be adequate to prevent much of a run up in prices.

EXHIBIT 1. Mid-Month Price Received by U.S. Farmers for Alfalfa Hay



Less alfalfa hay than last year has been produced—but well above the long time average. This year, about 63 million tons of alfalfa will be produced in the U.S. Last year 67 million tons were produced and the 1950-59 average was 56 million.

The percentage of times alfalfa prices have gone up, stayed the same or gone down from October to December to February and to April are shown in Exhibit 2. Kansas prices were used for this comparison.

Here is how to read the exhibit: The top part of the bar in the first column, for example, indicates the percentage of times that prices went up. In the case of the October to December change it was 95%.

The middle part of the bar, where there is one, indicates the percentage of years prices remained the same from October to the months as indicated. The bottom part of the bar shows the percentage of the years prices went down from October.

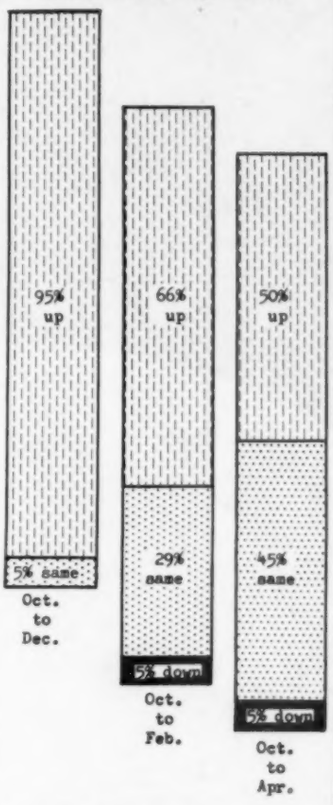
You will notice that hay prices have gone up from October to December better than 9 years out of 10 since 1939. In no year have prices averaged lower in December. You don't find hay prices going down much between October and the spring months although April has been higher than the previous October only half of the time, it has been the same nearly the other half.

Alfalfa hay prices generally reach their seasonal low in June and July which are heavy production months. In the last 20 years, alfalfa hay prices have gone up from August to October every year. And, as you can see from Exhibit 2, prices have continued to go up from October into the winter.

Prices Vary by Regions

Of course, hay prices vary a great deal from one area to another. Because of its bulk, hay is an expensive commodity to move. However, there is a "chain-link" market reaction where markets do overlap making for some dependence of prices in one area on the prices charged in another.

EXHIBIT 2. Changes in Kansas Farm Price of Alfalfa Hay, 1939-60



Of course, the same price pattern is not followed every year. Whether or not it is a relatively short or long winter has an influence on the price patterns. In making the price comparisons, average prices received by farmers have been used. This does not take quality differences into account. Moisture content, for example, is higher immediately after cutting and baling than hay which has been cured over a season. You would normally expect higher prices later on to compensate for storage costs and for the curing of the hay.

Hay prices this season can be expected to advance seasonally into the winter months. Such advances, however, are likely to be limited in most areas.

Firm Will Introduce 'Poultry Harvester'

FAYETTEVILLE, ARK. — Southwest Manufacturers, Inc., Fayetteville, has announced that introduction of its new "poultry harvester" in the near future will be a "major step in further automation of the poultry industry."

The company plans to have the machine on the market in the next 60 days. It is designed, says the company, to speed up catching, crating and loading broilers on the farm. It is said to cut down the number of men needed for the job and reduce downgrading due to injuries from hand catching.

Roy Crain of Southwest Manufacturers says that it will be possible for six men to load 8,000 broilers per hour with the unit.

In operation, broilers are driven from the house over a ramp onto a conveyor belt. This conveyor is divided into four sections with variable speeds from 60 to 100 ft. per second so that the birds will be spaced out for counting.

Company officials explain, "The conveyor carries the birds to the upper unit where they go through a turnstile arrangement that counts them and also places them in crates according to a pre-determined count from 8 to 18.

"As the birds go into the upper unit, rubber fingers break their fall through the chutes into the crates below the unit on the bed of the truck. These fingers also tend to clear out the area in the crate just below the drop chute and assure that the birds are placed in the crate.

"There are two chutes going into the crates, and the counter controls a hydraulic flop gate that switches the birds' fall into the chutes according to the pre-determined count. The crates are on rollers so that they can be quickly loaded onto trucks at each side.

"Six men are needed for handling birds with the unit—two in the house to drive them onto the ramps, and two on each side to load the crates onto the trucks.

"The unit is self-contained, highly portable and can be set up in about four minutes. It is designed to go on either a ½- or ¾-ton truck. All of the equipment is hydraulically operated from the PTO on the truck. Exact price the unit will sell for has not yet been determined."

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NUTRITION LABORATORY—A modern nutrition laboratory at Colorado State University provides space and equipment for carrying out basic research procedures. Here, Dr. Paul A. Thornton instructs two graduate students in the use of an isotope counter.

Centennial Nutrition Report from:

Colorado State University

Poultry

By Dr. Robert E. Moreng
Head, Poultry Department

The major portion of the poultry research program involving nutritional investigations at Colorado State University has been concerned with the needs of the laying hen. This research has been led by the work of Dr. Paul A. Thornton in his research on the vitamin C requirements of the fowl during egg production and early growth periods. Dr. Thornton has demonstrated that the laying hen can benefit by the addition of low levels of ascorbic acid to her diet during periods of hot weather stress. There have been some factors, however, which may modify the response of the laying hen to vitamin C; therefore, a great deal of the research work has been directed toward answering some of the questions concerned with the metabolism of ascorbic acid and its role in egg shell formation.

R. E. Moreng

This research has involved the study of the formation of the shell matrix as well as the effects of vitamin C on egg shell thickness, matrix structure and interior egg quality. Facilities from our new research laboratory have been very helpful in approaching this problem from a number of basic avenues of attack. Radioactive isotopes have been employed to trace the path of calcium in bone formation, while histological techniques have provided the basis for microscopic studies of tissue structure. In addition, utilization of controlled temperature chambers has made it possible to have summertime temperatures at any time of the year.

Protein Requirements

Protein requirements of the laying hen have long been a point of interest for the researchers in poultry nutrition and poultry breeding at our station. Since there is evidence that protein level influences the response of the laying hen to ascorbic acid, the importance of protein level in the diet has been further accentuated in our research program.

Our investigations on this subject have been approached from a number of directions. One aspect has been concerned with the needs of the hen for a balance of amino acids in the diet as related to protein level. Results have shown in past years that satisfactory egg production levels can be maintained on low protein diets; however, there is some reduction in egg size when protein levels are dropped below 15% to 13 and 11%. At 13% protein, a very high percentage of the eggs remain in the large egg classification. Protein needs of the laying hen have also been subjected to the genetic approach.

In a series of studies carried out over the past four years an attempt has been made to select laying hens for the ability to utilize specific protein levels. This has been pursued by selection for either a low protein (13%) diet or a high protein (17%) diet. In addition to this selection at-

(Turn to MORENG, page 28)

CAGED BIRDS—At Colorado State University, individually caged birds may be provided with group or individual feeders as the research plan may desire. Individual water cups in each cage minimize nutrient contamination between groups of birds.

Beef, Dairy and Sheep

By Dr. C. D. Story
Chief Animal Scientist

The total nutrition research program at Colorado State University is currently organized according to areas of research into:

C. D. Story

1. Nutrition and management of range cattle and evaluation of range forages for cattle and sheep.
2. Feedlot studies with cattle and sheep being finished for market.
3. Fundamental studies on: (a) rumen metabolism, (b) effect of environmental temperature on composition of body fat in lambs, (c) mineral nutrition in livestock production.
4. The effects of altitude on growth and production in livestock.
5. Management and feeding of dairy cows and replacement dairy heifers.

At present this nutrition research program involves beef cattle, dairy cattle, sheep and laboratory animals. In the near future swine nutrition studies will be initiated with new facilities that are now available. Other new and expanded research efforts will be directed toward more intensive work in the areas now being investigated.

Range Cattle Studies

For the past nine years range cattle nutrition studies have been conducted at the Eastern Colorado Range Experiment Station, a 3,750-acre dryland, sandhill-type ranch. At present, these studies involve various roughage feeds commonly produced in dryland areas using different methods of feed preparation and ration supplementation in an attempt to make more efficient and economical use of home-grown feeds in a cow-calf operation. Another aspect of this study involves an attempt to measure changes in forage quality throughout the growing season using in vitro fermentation techniques.

Range cattle nutrition studies are also being conducted in western Colorado using irrigated meadows on mountain ranches. The major objective of these studies has been more efficient production and use of mountain meadow forages for beef cattle production. Over an 11-year period results of these investigations have given answers to the following questions:

1. When do we cut hay?
2. Should protein supplements be used?
3. Do we need mineral supplements?
4. Can we replace hay with concentrates?
5. Does stilbestrol increase the efficiency in animal use of the feed?
6. Does chemical fertilizer influence the feeding value of hay?
7. Is one variety of forage better than another?

Currently an experiment on making and feeding grass silage from irrigated meadow forage is under way. In addition, the influence of nitrates in nitrogen-fertilized forages on their nutritional quality is being investigated using in vitro rumen fermentations and individual feeding experiments with calves. Carotene and vitamin A levels in blood and liver are being measured.

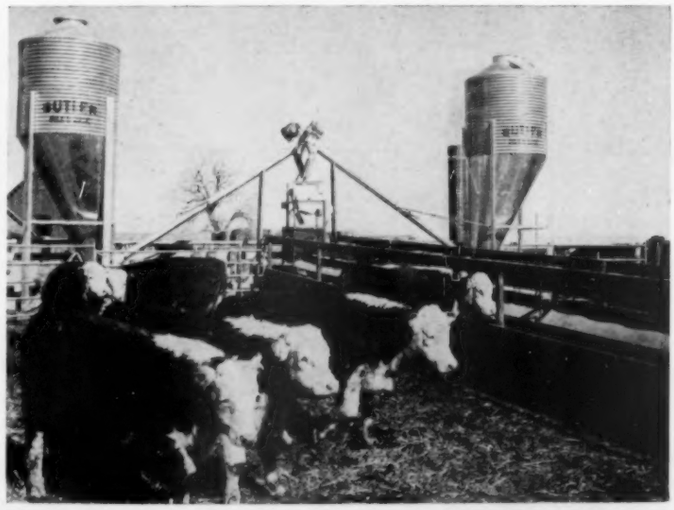
New Program Initiated

Dr. John Matsushima, formerly in charge of beef cattle nutrition research at the University of Nebraska, has recently joined the animal science department at Colorado State University. Dr. Matsushima will initiate a new and expanded research program in nutrition of beef cattle. Much of this new and expanded research will involve direct participation of Colorado cattle feeders and local packing plants. Such field experiments will be designed to test the application of results from fundamental and basic studies conducted at the experiment station laboratories and feedlot on the university campus. The field studies may also serve to help isolate and identify problems that may require further investigation under more controlled conditions at the experiment station facilities on campus.

Currently and during the coming year beef cattle and sheep nutrition research will include studies on the use of hormones to produce leaner beef, automation of feeding equipment for fattening cattle, the effect of plant estrogens on the nutrition of sheep and cattle, and feeding pelleted rations to fattening lambs.

Basic Research

Basic animal nutrition research is being conducted in several areas at Colorado State University. One project which has undergone intensive investigation during the past two years is a study of intermediary metabolism of the ruminant as influenced by various feeds. This project is divided into two main areas of investigation. One is a study of a condition usually



FEEDLOTS—This feedlot near the campus of Colorado State University is used to test the application of fundamental and basic beef cattle nutrition studies. Dr. John Matsushima, who recently joined the Colorado animal science department, will initiate a new and expanded research program in beef cattle nutrition.

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described as ruminal parakeratosis. Two feeds, dried beet pulp and dehydrated alfalfa pellets, have been shown consistently to produce this condition when fed as the principal feed. The effect of some other feeds on ruminal parakeratosis has been studied. These include all-barley rations, high nitrate hays and pelleted sun-cured hay. Also, a survey of the incidence of the conditions among a random sample of slaughter cattle has been conducted. A technique for evaluating color variations of rumen epithelium with a reflection meter, which provides a quantitative assessment of the differences, has been developed.

Perhaps the most significant finding is that the rumen fluid from affected cows when fed to rats or chickens produced similar histological changes in the gastrointestinal tract of these species. This makes possible study of this disorder with laboratory animals. Preliminary studies have shown that the histopathology of ruminal parakeratosis is similar to radiation damage of stratified squamous epithelium in monogastric species. It is planned to investigate this relation by irradiation of rumen tissue.

All parakeratotic diets studied so far produced a drastic reduction in the fat percentage of milk but have had little effect on the volume or the protein percentage of milk. Studies of volatile fatty acids indicated gross change in their concentration or percentage in the rumen contents of parakeratotic cows. Studies are planned to investigate differences in absorption rates from rumen between affected and normal cows. The economic importance of parakeratosis is likely to increase with the increased use of the newer feed processing methods.

Artificial Rumen Studies

The other principal phase of this project deals with artificial rumen studies. Gas production, volatile fatty acid and methane production is being studied with a variety of feeds including those which produce parakeratosis. An attempt is being made to apply one or more of these measures to feed analysis with the goal of developing a rapid biological evaluation of feeds which eliminate some of the limitations associated with chemical analyses. Total gas production measurements show differences between alfalfa hay and pelleted dehydrated alfalfa, yet these differences cannot be shown by common chemical methods although the biological effects are strikingly different.

Other basic studies include: (1) The effect of vanadium in the diet of rats, (2) the value of fermentation products in ruminant nutrition, and (3) the effect of environmental temperature on composition of lamb fat. The latter study has resulted in observations that temperature extremes (40° F. to 90° F.) caused highly significant differences in the iodine numbers and melting points of subcutaneous fat between groups of lambs.

Altitude Studies

Studies with cattle, sheep and rats have been and are currently being conducted at various altitudes throughout the state of Colorado (3,500 to 10,500 feet) to determine the effects of altitude on blood and body composition as well as glandular and organ development. Nutritional data is being collected, also. This project is a part of a western regional project involving several other states in the western region.

Dairy Cattle

Several studies on the nutrition of dairy cattle are currently under way. For example, feeding dehydrated alfalfa pellets as the only roughage to dairy cows has resulted in a marked decrease in fat percent of milk and total pounds of fat produced. Future study will attempt to relate this observation to the phenomenon of rumen parakeratosis, rate of absorption of nutrients from the rumen and changes in rumen bacterial metabolism.

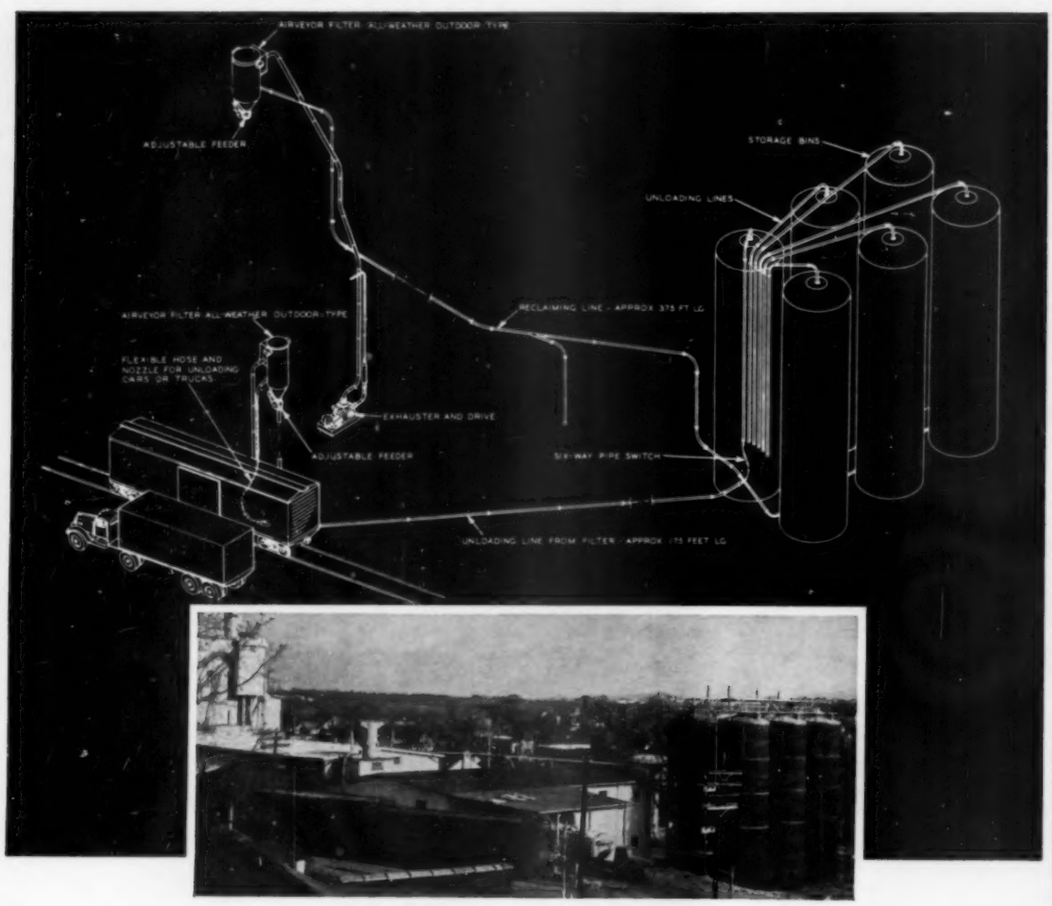
Another project in dairy cattle nutrition is the use of high level feeding as a means of reducing the rearing time for replacement stock. The animals on this experiment were started as heifer calves and are now completing their first lactation. This project will continue for approximately five more years in order to accumulate enough data for reliable conclusions.

MORENG

(Continued from page 26)

tempt, four commercial lines of hens have been tested on three protein levels—17, 15 and 13%. A measure of their ability to perform as expressed through egg production, interior egg quality and maintenance of body weight is providing data on established specific genetic populations. This approach has also been concerned with the growth of the chicks produced from selected dams on various protein levels during their early growth period. At the present time these data are being subjected to statistical analyses for critical evaluation. This research has been sponsored by the American Poultry & Hatchery Federation, as well as a number of private, interested commercial concerns.

A modern cage house with a capacity of 1,452 birds in individual cages with individual feeders has made possible precise investigations of these subjects. Research pertaining to the protein energy and fiber requirements of the growing pullet has also been initiated during the past two years. The results of these studies have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TEXANS AT IOWA POULTRY SCHOOL—Twelve men from Texas, shown in this picture, were among 29 students from eight states and one province of Canada who attended a four-day poultry short course at Dr. Salsbury's Laboratories, Charles City, Iowa. At the right is Dr. J. E. Salsbury, chairman of the board of the poultry and livestock health product firm. Left to right are: S. E. Davidson, Waco, Dr. Salsbury's territory manager; Alvin D. Woods, Kerrville; William E. Bynum, Pittsburg; Bill C. Christian, Stephenville; Earl L. Mackie, Hurst; Don L. Waldrep, Sulphur Springs; Ernest Jones, Abilene; Dale Lipsey, Abilene, Dr. Salsbury's territory manager; George M. Cooper, Kaufman; Harold J. Berger, Lamesa; Charles E. Harrison, Gilmer; and Marvin V. Weber, Abilene.

proved very interesting through the utilization of brewers dried grains. This product added to the diet of pullets provides the necessary fiber to control feed intake while also supplying to the hen a relatively high quality protein material.

Vitamin Supplementation

An extensive series of studies has also been carried out concerning the effects of energy level on the requirements of the growing chick for vitamin supplementation. The vitamin A and thiamine needs have been thoroughly investigated and reported, and results of additional studies concerning B complex vitamins are being prepared for publication at the present time.

It should be emphasized that a high percentage of the research program of the department and staff has been concerned with the needs of the laying hen from day of hatch through a complete production period. As has been pointed out, these requirements are being studied from a number of different angles in order to attempt to coordinate nutritional factors with both environment and genetic influences.

Stress conditions of high temperature have been of particular interest, and the ability of the laying hen to adjust to this stress is providing some interesting data concerning body temperature regulation. Dr. Paul A. Thornton has led the department in this approach with the assistance of a number of well-trained technicians. The growing need for additional research in these lines emphasizes itself more distinctly as the poultry industry continues to turn toward environment control and reduced feeding costs in egg production.

Certainly, it is well realized that the diet of the laying hen is an intricate subject for investigation and provides the research worker with numerous challenges. Our attempts have been made on the basis of complete studies of these reactions and the relative factors involved. The future research program will be constructed around further investigations of the mechanism of function of ascorbic acid from the diets of the laying hen. Extensive studies involving pullet rearing requirements are also planned.

SUMMARY OF COLORADO STATE UNIVERSITY POULTRY NUTRITION ACCOMPLISHMENTS

—1. The protein requirement for egg production was found to be not greater than 13%. This level sufficed under both floor and cage conditions and for four different strains of birds.

2. There is very ittle difference in rate of production or mortality for floor or cage managed birds.

3. The thiamine requirement for growing chicks was increased when the energy level of the diet was elevated with carbohydrate. Increasing the energy level with oil resulted in a sparing effect of thiamine. The Leghorn chick was found to have a higher requirement for thiamine than heavy breed chicks.

4. Increasing energy in the chick diet increased the requirement for riboflavin.

5. The pantothenic acid requirement for growing chicks was increased by higher levels of energy when of a carbohydrate nature; however, corn oil energy elevation reduced the requirement of this vitamin.

6. The vitamin A requirement for growing chicks was not altered by energy level, sex or breed differences.

7. Supplementation of ascorbic acid to the layer diet was found to reduce the normal decrease in egg shell thickness under stress of hot weather.

8. The ability by the hen to synthesize vitamin C was observed to be reduced when the animal was subjected to increased environmental temperatures.

9. Hens given 13% protein diet responded readily to vitamin C supplementation as exhibited by a shell thickness maintenance, while hens given the 17% protein diet showed a slightly negative response to this vitamin.

10. The level of tyrosine and phenylalanine in the diet appears to have an influence on the shell thickness response to ascorbic acid supplementation.

11. The bird, when acclimated at 80° F., can control the body temperature more effectively with either the increasing or decreasing environmental temperature if a source of supplementary vitamin C is added to the diet.

12. Progeny from parents given vitamin C appear to form bone matrix more rapidly than comparable chicks from control parents. The response to vitamin D deficiencies is also altered by this parental treatment.

13. Dried brewers yeast containing added charcoal has no detrimental effect on growth when added to chicken and turkey diets at 2.5 or 5.0% of the diet.

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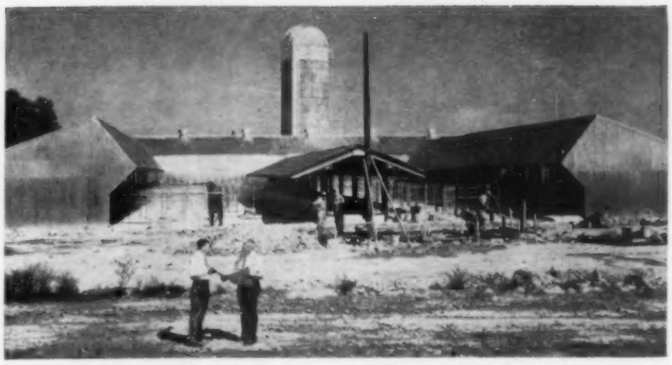

NEW BEEF UNIT—Dr. W. W. Cravens (right) and Dr. Leo Curtin, director and assistant director, respectively, of Central Soya's feed research department at Decatur, Ind., check on the progress of construction of a new U-type beef unit at the company's research farm. The unit consists of one silo and two cattle sheds, with an outside feedlot area, divided by a covered feeding alley with feed bunks. A feed and bedding storage building across one end joins the cattle sheds, and covered feed bunks. Capacity will be 192 feeder cattle in 16 pens of 12 head each. Each pen will provide 384 sq. ft. of shed and 480 sq. ft. of concrete paved outside lot. This facility will be used to develop and improve formulas for Master Mix beef feeds.

Study Synchronized Breeding for Hogs

URBANA, ILL.—Synchronized breeding offers one of the few possibilities for making artificial insemination of hogs practical, believes Dr. Philip Dziuk, University of Illinois animal physiologist.

"To make artificial insemination of hogs practical, the females to be bred must come into heat at the same time," said Dr. Dziuk. "Then the farmer can have them bred at the same time. Otherwise, he must have each female bred as she comes into heat. This is more trouble than it's worth, since (1) hogs are not usually handled individually, (2) it's difficult to accurately detect heat and (3) hogs come into heat any time during a three-week period."

With synchronized breeding, however, females come into heat simultaneously. Here's the experimental procedure Dr. Dziuk is using to make this possible:

A female sex hormone is mixed with the feed going to sows and gilts. The hormone prevents them from coming into heat. When the farmer wants to breed the females, he returns them to a normal diet. Within a few days, most of the females come into heat at the same time. Then they can be bred.

"Savings in time and labor are among the biggest advantages of synchronized breeding," says Dr. Dziuk. "Farmers can plan their breeding and farrowing schedules for a predetermined five-day period instead of the 30 days it usually takes.

"Offspring are more uniform in age—making them easier to handle, feed and sell. Farmers can also plan their breeding programs so that animals can be marketed at the most advantageous times."

Dr. Dziuk and colleagues report they have been working for several years to perfect synchronized breeding. When they first started tests, they used mice. Results were so promising, they say, that they began testing a few hogs.

As the tests progressed, results reportedly became more and more encouraging. Dr. Dziuk also modified the method of synchronizing breeding to make it more effective. He explains that because of the hog's peculiar physiology the first method sometimes caused cystic ovaries.

To overcome this disadvantage, he states that he is now feeding a much higher level of the female sex hormone in conjunction with other hormones. This year he has stepped up testing of these improved methods and is using hogs on several selected Illinois farms.

Dr. Frank Hinds of the University's Dixon Springs Experiment Station reports that he tested synchronized breeding on a small flock of ewes last winter. Results were so successful that he plans to test a much larger flock this fall, he commented.

He said he uses the same method used for hogs except that only one hormone, the female sex hormone, is necessary. He reports that after this hormone is withdrawn from the feed, ewes comes into heat simultaneously and can be bred within 48 to 72 hours. Unlike hogs, sheep do not develop cystic ovaries from the hormone, he said.

Dr. Hinds found that synchronized breeding has many of the same advantages with ewes as with hogs—especially saving time and labor during lambing.

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Increase in daily production, lbs.	—	0.87
Increase, %	—	3
Extra milk per cow, lbs.	—	161.8
Value of extra milk, (2)	—	$8.09
Cost of Terramycin per cow, (3)		$1.26
Extra return per cow	—	$6.83

(1) Range 119-280 days
(2) Milk valued at $5 per cwt.
(3) Terramycin 13.95 gm. per cow; value $0.09 per gm.

*The trials reported here did not include studies on Bloat and Scours.

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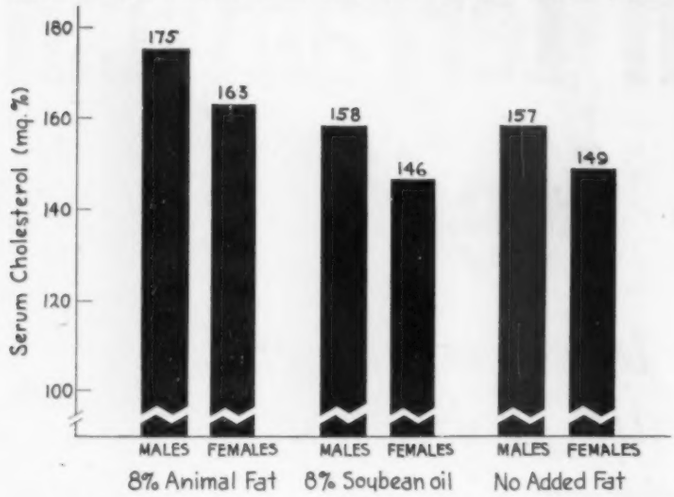
FIGURE 1. Effects of Dietary Fat and Sex on Serum Cholesterol of Growing Chicks



Poultry

By Dr. S. L. Balloun
Department of Poultry Husbandry

In talking about our poultry nutrition research at Iowa State University we always try to remember that this is only one phase of poultry research and that by itself it would be relatively ineffective. We need to develop top rations to feed our chickens, but at the same time we must have superior genetic stock in good health before our efforts can be of any avail. Our research in poultry nutrition is organized under three general projects: (1) Nutrition of young chickens, (2) nutrition of laying hens and (3) turkey nutrition.

S. L. Balloun

CHICK NUTRITION—Under chick nutrition, our work falls under about three main categories: (a) Protein and amino acids, (b) fats, choline and cholesterol interrelationships and (c) fundamental studies aimed at the better understanding of the chick through a study of blood composition, microflora of the intestines, and a study of nitrogen excretion and retention.

Protein and amino acids—The chick diets fed in Iowa, generally based on soybean oil meal and corn, with mineral and vitamin supplements, are not apt to be deficient in any amino acids except possibly methionine. No other amino acid has improved performance in our experiments with chicks when practical diets are fed. We have experimented with various energy and protein levels and find that we can increase both growth and efficiency of feed utilization by increasing protein up to 25% and by the use of fats to increase the energy of the diet. The increase of protein, of course, is more important in increasing early chick growth and the increase of energy is more important in producing a well-finished and heavy carcass in the last few weeks of growth.

Fats, choline and cholesterol—We are conducting extensive studies with various fats in the diets of young chicks and find little difference between animal fats and soybean oil, except in the effect that these have on the blood cholesterol of chickens. Most types of fat seem to decrease the feed required per pound of gain about equally.

It is interesting to observe that in Iowa State tests soybean oil did not change serum cholesterol of young chickens and that animal fats tended to raise serum cholesterol slightly. (Figure 1.) In the same experiments choline, a vitamin that is thought to be important in fat metabolism, tended to improve the utilization of the high animal-fat diets but did not affect feed efficiency when the diet contained no added fat nor when soybean oil was the fat added.

The importance of this work is hard to evaluate at the present time, but we are basically interested in finding out all we can about the use of fats in poultry feeds; not only how they affect growth and feed utilization efficiency, but also how these fats affect the products—eggs and meat. In relation to fat metabolism we are also studying the effects of vitamin B_{12} on fat usage. (Figure 2.) Another phase of our studies in this area includes the effects of certain chemicals which have been shown to affect cholesterol metabolism, on the blood composition of young chicks.

Fundamental studies of blood com-

(Turn to BALLOUN, page 36)

Cattle, Sheep and Swine

By Dr. Wise Burroughs
Department of Animal Husbandry

The primary purpose of this report is an attempt to review some of the newer approaches already under way and some of those beginning to take shape in animal nutrition research at Iowa State.

Wise Burroughs

One new approach which appears to permeate all animal nutrition researchers within this animal husbandry department is the development of new feeding practices which will result in improved quality characteristics of livestock or livestock products being produced.

A second new approach in animal nutrition research at Iowa State which is gaining momentum is research dealing with feeding-management considerations as they relate to mechanization, automation and housing of all species of livestock.

Swine nutrition research in recent years has involved "pig hatcheries," early weaned baby pigs, palatability studies, ration pelleting and water and housing considerations. Beef and lamb feeding experiments have involved housing, ration pelleting, roughage substitutes in high-concentrate rations as well as automatic multiple feeding by time clock. "Loose housing" and the feeding of pellets and hay wafers are examples of this feeding-management type of research with dairy cows.

A third approach in animal nutrition research at Iowa State which is growing and which likely will be emphasized more in the immediate years ahead is basic physiological studies inquiring deeper and deeper into the fundamental considerations underlying the nutrition of all farm animals.

Some of the studies involve amino acid absorption and utilization in swine and ruminants, rumen volatile fatty acid metabolism in cattle and sheep, and physiological considerations relating vitamins and hormones to body growth in cattle and swine. Some of the newer laboratory techniques being used in fundamental nutrition studies include radio-tracer studies, emission spectroscopy, automatic column fractionation of amino acids in body fluids, immuno-chemical assays of body circulating hormones, and gas-phase chromatographic analysis of volatile fatty acids.

Another relatively new approach in animal nutrition research at Iowa State is the use of hormones as feed additives in improving lactation as well as growth and efficiency of feed utilization in cattle, sheep and swine. The break-through achieved a few years ago with stilbestrol in stimulating liveweight gains and improved feed efficiency in beef cattle has stimulated interest in attempting to achieve similar advances in nutritional performance of other livestock species by special hormonal regulation methods. Closely related to feed additive research involving hormones is feed additive research involving antibiotics and other agents which improve feed utilization in livestock. Antibiotics, chemobiotics, arsenical compounds, grub and worm control agents and others are examples of this type of feed additive research. Other feed additive research of relatively recent origin includes the use of dietary enzymes and tranquilizing agents in attempts to improve ration performance in farm livestock.

Digestion

Mention should be made of research dealing with digestion and metabolic disturbances in the different species of farm livestock. Most of these disturbances such as bloat in ruminants; ketosis in lactating animals; enterotoxemia in cattle, sheep and swine and founder in fattening ruminants are not new disturbances unrecognized in former years. Nevertheless, these disturbances require new research approaches since they appear to be on the increase.

This apparent increase in digestive and metabolic disturbances is believed to be related directly or indirectly to accelerated livestock production in which animals today are being pushed to higher and higher levels of nutritional performance. For example, in the case of bloat in ruminants, this disturbance occurs most frequently on the better pastures containing legumes at those times when the nutritional value of the pasture is at or near its highest peak. Ketosis in lactating animals is a disturbance found most frequently in the better bred animals capable of using higher levels of nutrition in performing high levels of lactation. Likewise, enterotoxemia in all livestock species and founder in ruminants occur most frequently at the higher planes of nutrition in which high levels of concentrates (high-energy feeds) are being fed.

Summary

This discussion of new approaches in animal nutrition at Iowa State University is not complete since it is difficult to summarize in a few paragraphs the current thinking and activity of the large number of staff and advanced students working in the Animal Husbandry Department. Also, no attempt has been made in this discussion to list the various new research approaches in the order ac-

RESEARCH FACILITIES—Examples of specialized, highly technical apparatus used in animal nutrition research at Iowa State University are shown here. Bone density of swine is being measured by x-ray in the photo at left. In progress in the photo at right is a fatty acid nutrition study involving dairy calves.

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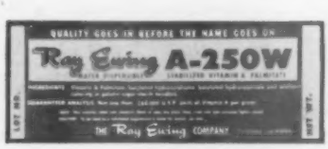

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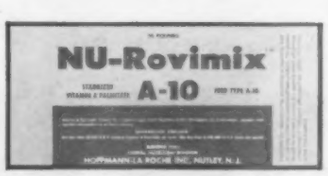

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cording to their importance. Nevertheless, the new approaches discussed with respect to current animal nutrition research at Iowa State can be summarized briefly as follows:

1. New research involving quality considerations in livestock and livestock products.

2. New research dealing with feeding-management related to lower labor costs and greater mechanization in livestock feeding.

3. New basic or fundamental types of research in building a stronger foundation for future developments in animal nutrition.

4. New research dealing with the hormonal regulation of growth and lactation in improving livestock nutrition.

5. New research dealing with digestive and metabolic disturbances in livestock in improving animal nutrition.

BALLOUN

(Continued from page 34)

position, microflora and nitrogen excretion — The way in which chicks make use of food elements and the effects of nutrients and other chemicals on certain basic body processes is a field which always interests us. While such studies do not lend themselves to immediate practical usage, they lead to a better understanding of the chick and ultimately the information obtained from basic studies provides the foundation for further improvements in poultry rations.

We have been studying the effects of amino acids in purified diets on blood composition and intestinal microflora and find some fundamental changes in these physiological criteria which may lead to future important research work in poultry nutrition. One of the types of fundamental chick research with which we have been concerned is the study of how a chick excretes nitrogen and how this is affected by such chemicals as hormones. To obtain separate urine and feces from chicks it is necessary to operate on the chick and to make collections in plastic bottles fastened to the chicken. The work is necessarily tedious and very few birds can be used at any one time. However, the method is a very useful tool in the study of basic metabolism.

NUTRITION OF LAYING HENS —Since the object of feeding laying hens is to produce a highly palatable and nutritious food we devote a good share of our facilities and time to the study of factors affecting the quality of eggs produced. In these experiments we have studied fats and cholesterol, calcium and phosphates, and protein and energy levels in respect to how these affect production and the quality of the eggs produced.

Since fats are being used to a considerable extent in animal diets we have thought it would be of interest to find out a little more about the effects of types of fats on production of eggs and egg quality or composition. Accordingly, we have fed diets

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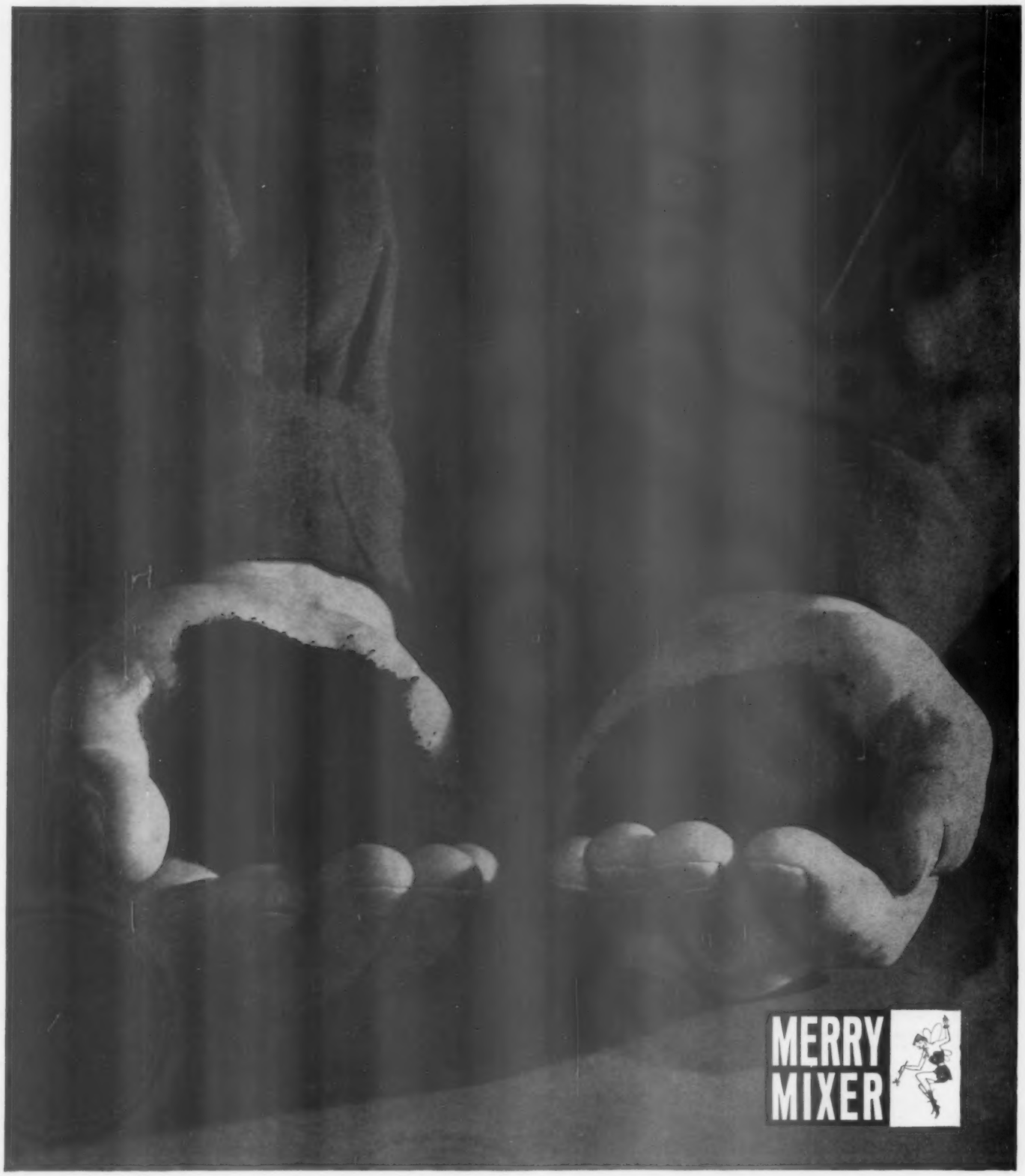

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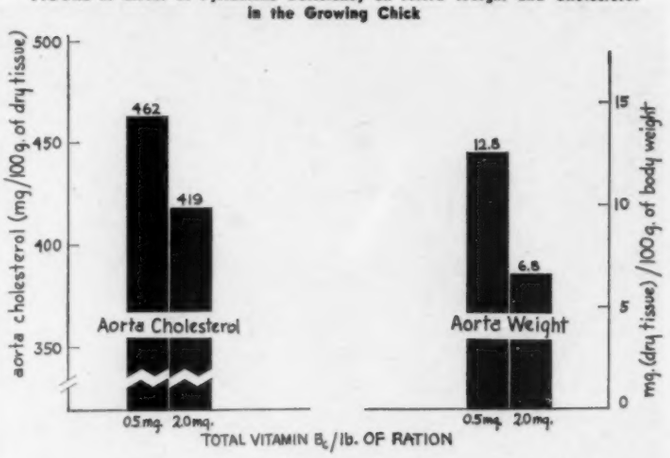
FIGURE 2. Effect of Pyridoxine Deficiency on Aorta Weight and Cholesterol in the Growing Chick



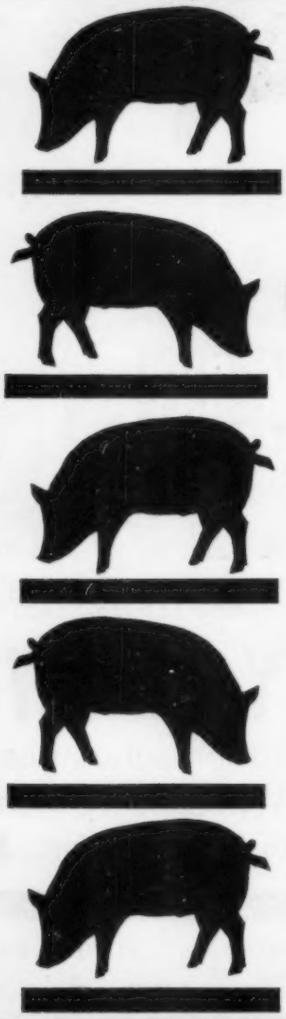
containing high levels of soybean oil and animal fat to hens kept in cages. Added fat has not significantly affected egg production or feed required per dozen eggs as long as the energy of the diet remained constant. Soybean oil markedly lowered serum cholesterol levels while animal fat had no effect on the amount of cholesterol in the blood. (Figure 3.)

We have not been able to affect the amount of cholesterol in eggs by diet changes. In another trial we fed various types of fatty acid concentrates in an attempt to find why animal fat and soy oil differ in their effects on blood cholesterol. We have found that highly unsaturated fatty acids, similar to those found in soy oil, had about the same effect as did the crude soy oil.

TURKEY NUTRITION—As far as turkeys are concerned, most of the work at Iowa State University has been in the field of amino acids. We have studied the amino acids, arginine, glycine, methionine and lysine in diets varying in protein and energy fed to poults to market age.

One of the more significant findings from this research has been that lysine rarely improves performance of poults in the starting periods except when the protein content of the diet is inadequate. However, as the poults mature and corn is substituted for soybean meal in the diet, reducing the protein and increasing the energy of the diet for the finishing period, lysine becomes a critical amino acid and its addition can be expected to improve growth and finish markedly.

In several Iowa State University trials, the addition of a pound of lysine per ton of complete feed has improved weight gains in the finishing periods over a pound per bird, most



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STABIMIX E is *stable* in both animal and poultry feeds, even when stored for long periods of time . . . *stable* when exposed to wide ranges of temperature and humidity . . . *stable* in pelleted feed . . . and *stable* in the presence of minerals. A *most complete* range of stability for milling use.

STABIMIX E is free flowing. The vitamin E beadlets in STABIMIX E are given a protective coating of *readily-digestible* materials.

STABIMIX E remains in uniform distribution in a mixed feed . . . will not arch in bins, hoppers or mechanical feeders. Containing only dl-alpha tocopheryl acetate as a vitamin E source, STABIMIX E is *fully active biologically.*

Because the vitamin E contained in STABIMIX E is in an emulsified form, it is absorbed more rapidly than from the oil-solution forms.

To meet the requirements of most feed manufacturers, STABIMIX E is conveniently packaged in *two* potencies: 50,000 *and* 20,000 International Units per pound . . . each in 50-lb. fiber drums with liner.

For a quotation and complete information on STABIMIX E or STABIMIX A, the Merck feed grade vitamin A, ask your Merck Feed Products Representative, or write:
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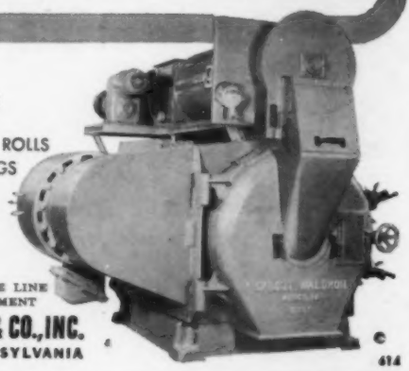
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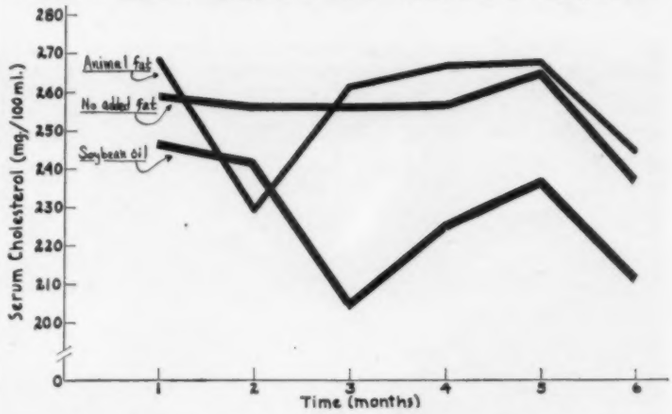
FIGURE 3. Effects of Dietary Fat on Serum Cholesterol in the Laying Chicken



of this coming after the 20th week. Methionine, on the other hand, has rarely improved performance noticeably in later periods but has increased both weight and feed efficiency in the early periods of poult growth.

Other turkey research at Iowa State has included the evaluation of various antibiotics in poult diets, the study of the hock problem of market poults as affected by minerals and vitamin A and studies with breeding turkeys as related to vitamin E, choline and fat. For the future we see as increasing in importance the study of factors affecting soundness of legs in market poults, and in breeding turkeys we visualize studies of factors affecting fertility and hatchability in eggs. These studies will take number one priority in turkey nutrition research work at Iowa State University in the next 10 years.

'Get Big or Get Out,' Poultrymen Told

CENTRALIA, WASH.—"Get big or get out of the poultry business."

That was the message of Dr. Cliff Carpenter, Laguna Beach, Cal., to poultrymen attending Washington State University's fourth annual Poultrymen's Institute. The institute was held at Centralia College.

Dr. Carpenter told the group that the present price squeeze has just about forced poultrymen to choose between expanding their operation or shifting to some other enterprise.

The poultry consultant defined a small poultryman as one handling 20,000 layers or less, 50,000 fryers or less or 10,000 turkeys or less.

Two great forces producing the price squeeze, Dr. Carpenter said, are "abundant feed supplies and the buying power of supermarkets and chains. And neither force is likely to diminish in the foreseeable future."

Another speaker, Rex Parsons, general manager of the Ranier Poultry Co., Seattle, told the institute that supply and demand still determine fryer prices. The national supply and average national price affect fryer prices in Washington, and the importation of fryers from southern states also has a bearing on prices paid Washington producers, he said.

Mr. Parsons assured Washington producers that "most retailers admit a willingness to pay a premium of 2¢ or more for Washington fryers over imports, and, in practice, will usually pay a 4¢ premium."

Payment of the premium, however, does depend on a number of factors, Mr. Parsons said. These include stable local supply distribution, good service by local processors and relatively stable import prices.

ANY WAY YOU MIX IT
(from scoop to push button)

Sterling All Weather Salt helps you make better feeds
All the things you want salt to do in your feeds—flow freely from bulk bin or bag, mix thoroughly, distribute pre-mixed trace elements or drugs uniformly—Sterling All Weather Salt does them better. Regardless of weather or storage conditions. ■Here's why. Sterling All Weather Salt contains an exclusive anti-caking agent that keeps it from lumping, caking or setting up, even through the most drastic humidity changes. Unload it in the rain; store it while the sun shines: no matter. Sterling All Weather Salt will be loose, free-flowing and dustless when you mix it. Which makes this high quality salt the ideal trace element and drug carrier. ■So . . . any way you mix it, any day you mix it, remember: non-caking, free-flowing Sterling All Weather Salt helps you make better feeds. You can get Sterling All Weather Salt in bulk or in 100 lb. bags (an excellent resale item for free choice feeding to livestock).
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Use FEEDSTUFFS Want Ads for RESULTS

Despite the almost annual introduction of new coccidiostats...

nfz® and *bifuran* still come closest to what you and your customers look for in a coccidiostat for replacement birds!

During the last few years — amid a lot of fanfare and promises — several new coccidiostats have been introduced to the feed industry.

While some have started off well, they have failed to live up to their advance billing. Not one has solved the coccidiosis problem.

Unfortunately, there is *still* no such thing as a perfect coccidiostat. We don't have one . . . and neither does anyone else.

But here's a point worth noting: While many heralded coccidiostats have come and faded away, *nfz* and *bifuran* have continued in demand for replacement birds. In fact, use of these two products in replacement feeds is growing.

No registration headaches — One reason behind the increasing demand for *nfz* and *bifuran* is the fact that you can use either of these coccidiostats *without registration problems.* They are not new drugs and are cleared for use in combination with almost all commonly used additives.

But a more basic reason is found in a recent survey in which feed manufacturers were asked, "What do you look for primarily in evaluating a coccidiostat for replacement birds?" The survey shows *nfz and bifuran come closest to providing the benefits wanted.*

Considered by far the most important feature of a coccidiostat for replacement birds is the building of "lifetime immunity" . . . followed by the "safety" of the drug. *nfz* and *bifuran* deliver both of these major benefits . . . plus many additional features that distinguish them from other coccidiostats. Following is the complete *nfz* and *bifuran* protective package:

Lifetime immunity to coccidiosis by housing time... that's a "must" for replacement birds. Both *nfz* and *bifuran* allow lasting immunity development, the natural way—by permitting a mild, controlled infection during the growing period.

Safe, nontoxic — Neither *nfz* nor *bifuran* has harmful effects on internal egg quality, shell texture, hatchability or fertility. Unlike most other commonly used coccidiostats, *nfz* and *bifuran* can be safely fed to laying hens. Also, these two medications are nontoxic to livestock and pets.

Control outbreaks — You can raise the *nfz* or *bifuran* intake to the coccidiosis treatment level...safely... without bringing in another drug. This is not possible with some coccidiostats.

Antibacterial — In addition to aiding in the lifetime immunity process, *nfz* and *bifuran* knock out many secondary infections that can sap vitality, cause nonproductive runts and culls. They give you more than just coccidiosis protection.

Effective against pullorum — By increasing the *nfz* or *bifuran* level to 3 lbs. per ton of feed for 10 to 14 days, you can prevent mortality from pullorum. There's no need to come in with other drugs.

In the light of current registration headaches and confusion about coccidiostats, we wanted to remind you that perhaps *nfz* and *bifuran* can help solve problems for you. They are still doing the same effective job of controlling coccidiosis and allowing immunity they've always done.

For an *nfz-bifuran* reviewing session, get in touch with your Hess & Clark representative.

Effective against necro in pigs

While you have nfz or bifuran in your mill, here's another use for the same medication. nfz (at a level of 10 lbs. per ton of feed) and bifuran (at an 8-lb level) are effective, low-cost treatments for infectious necrotic enteritis in pigs. Self-fed to the entire herd for 5 to 7 days, these drugs prevent disease damage and allow the pigs to overcome the disease drag of necro.

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NEW LOOK, but still the same dependable products — nfz and bifuran in their new 50-pound polyethylene-lined bags.

ZT-1-1

Centennial Nutrition Report from:

Kansas State University

Beef Cattle, Sheep and Swine

By Dr. Rufus F. Cox
Head, Animal Husbandry Department

Many animal nutrition projects are under way at Kansas State University, some purely fundamental, some strictly applied, and some of which contain both fundamental and applied aspects. These will be summarized briefly with only enough detail to set forth the objectives. Also, a few projects contemplated for the early future are listed.

R. F. Cox

Nutritive value of forages as affected by soil and climatic differences — Indications have been observed that wide differences in the response of animals to the same feeds grown under different conditions of soil and climate can be expected.

A number of soil deficiencies are known to alter the production of vegetative plant growth and possibly also of seed production. It is believed by some to affect the chemical composition of the plant also, and in turn to result in nutritive differences and corresponding differences in animal response. We are anxious to know whether the nutritive value of the plant to the animal can be altered by feeding the plant, through the soil.

Adapting roughages varying in quality and curing processes to the nutrition of beef cattle—Forage sorghum varieties with widely different agronomic characteristics are being tested to find the relationship between grain-to-forage ratios, chemical and physical differences to nutritive value.

Protein synthesis in the rumen—Identical twin steers, fistulated, are being used in this project which to date has emphasized development of techniques to study protein synthesis within the rumen rather than in vitro. Dialyzable sacs are used to collect sterile rumen fluid.

Factors affecting the feeding value of sorghum silage—This is a comprehensive, applied study cooperative between the departments of animal husbandry, dairy science, and agronomy. Information is obtained on such agronomic characteristics as sweetness, maturity, leaf-to-stalk-to-head ratio and chemical characteristics on the grass feeding value and digestibility for beef cattle and dairy cattle.

The value of Aureomycin for beef cattle, etc.—Chlortetracycline (Aureomycin) is being fed to steers to test its efficacy in a wintering-grazing-fattening system of beef production.

Cobalt "bullets" for beef cattle—Since cobalt is an essential mineral, it must be supplied if there is a deficiency in the feed. Object of this test is to determine whether 20-gm. cobalt bullets containing 90% cobalt oxide would improve the performance of cattle both on pasture and in the feed lot.

The value of enzymes added to beef cattle rations — Amylase and amylase-plus-protease enzyme preparations are being tested for their effects on appetite and gain of cattle in the feed lot.

Factors influencing profitable grass utilization and sound pasture management—The effects of various methods and levels of wintering are being tested by response of steer calves on winter bluestem pasture. The tests involve salt-protein mixtures and various supplements fed in combination and separately, use of various harvested roughages, etc.

The effects of grazing systems on livestock and vegetation have been studied for 11 years thus far. The main aspects of this phase of study have been to test deferred and rotational grazing against full season stocking, and to study the effects on livestock, on gain per acre, and on vegetation of normal-stocking, under-stocking and over-stocking rates.

Improvement of beef cattle through breeding—This is primarily a breeding study, but has important nutritional aspects. Bull calves, heifer calves and steer calves of two different blood lines are individually fed, weighed and measured for efficiency of feed utilization and rate of gain and growth.

Effects of various methods of processing grain sorghums with and without additives—Studies are being

(Turn to COX, page 44)

Poultry

By Dr. T. B. Avery
Head, Department of Poultry Husbandry

To demonstrate progress in broiler feeding, Dr. Paul E. Sanford, poultry nutritionist at Kansas State University, has conducted feeding trials to compare the development of recommended broiler rations at Kansas State during the past 34 years.

T. B. Avery

Three rations were formulated and fed to each of three lots of broilers of identical breeding. All lots were fed for 9 weeks. One lot was fed a ration mixed according to the formulas recommended by KSU in 1927. Birds in this lot averaged only .87 lb. each with a feed conversion of 10.28 lb. of feed per pound of gain. The second lot was fed the ration recommended in 1942. These birds averaged 1.70 lb. with a feed conversion of 3.19.

A ration recommended in 1952 was fed to the third lot and showed still further advances. Birds averaging 2.52 lb. in 9 weeks were produced with a feed conversion of 2.49 lb. of feed per pound of live broiler.

4-lb. Broiler in 8 Weeks

A very recent feeding trial (1961) has produced a 4.01 lb. male broiler chick in 8 weeks on 1.8 lb. of feed per pound of live bird (see accompanying photo). It should be noted that because this latest trial was not carried on at the same time as the other that a different strain of broiler chick was used. The diet fed is a practical type 21% protein broiler ration designed to utilize soybean oil meal as the chief source of protein when a corn-sorghum grain type ration is used. The ration is the one currently recommended at KSU by Dr. Sanford, who was responsible for its formulation.

The formula, as recommended, appears in the accompanying table.

Active projects are being carried on to compare the feeding of various kinds, amounts and combinations of antibiotics to growing birds and to laying hens. This station has produced broiler chicks more efficiently when 5 gm. per ton of each of two antibiotics was fed in combination, rather than when either antibiotic was fed alone. Indications are that less feed is required to produce a dozen eggs and that a slightly better egg shell is produced when antibiotics are fed in combination rather than as a single antibiotic.

Exploratory studies now in progress on the possible effect of certain chelating compounds on absorption and utilization of antibiotics look promising. Plans are to continue investigations with both broilers and layers on the feeding of various combinations of antibiotics and to initiate further studies using anti-

1960-61 KSU 21% PROTEIN CHICK BROILER RATION
(Department of Poultry Science)

Ingredients used	Per 100 lb. lb.
Corn, ground, yellow	30.00
Sorghum grain, ground	35.00
Alfalfa meal, dehydrated, 17% protein	2.00
Soybean oil meal, solvent extracted, 44% protein	25.00
Fish meal, 60% protein	4.00
Soluferm-500 (fermentation residue)	1.50
Calcium carbonate (limestone)*	1.00
Dicalcium rock phosphate*	1.00
Salt (sodium chloride)*	0.50
Total	100.00
Added per 100 lb.	**gm.**
CCC-244 with zinc (trace mineral mix)*	23
Vitamin A (10,000 USP units/gm.)†	10
Vitamin D_3 (15,000 ICU/gm.)†	5
Merck 58-A (B-complex vitamin mix)†	46
D-L methionine (feeding grade)†	23
Proferm-12 (vitamin B_{12} mix)†	10
Choline chloride—25% mix†	40
Amprol (coccidiostat)†	23
Baciferm-10 (zinc bacitracin antibiotic)†	45

*Mineral premix.
†Vitamin and additives premix.

FAST-GROWING BROILER — In a recent feeding trial at Kansas State University this male broiler was grown to 4.01 lb. in 8 weeks on 1.8 lb. of feed per pound of live bird. The bird was a meat strain crossbred (Vantress Cornish X Arbor Acres White Rock).

Dairy

By Dr. C. L. Norton
Head, Department of Dairy Husbandry

Through the years, nutritional research in Kansas has found ready acceptance by dairymen because effort has been made to conduct research studies of a practical nature. Along with applied studies, work has been done in fundamental research that has increased our fund of knowledge of basic nutritional principles. Investigations that will provide results for immediate use and studies that may have application in the future are currently in progress.

C. L. Norton

In 1957, Dr. E. E. Bartley received national recognition for his leadership in research work in the field of antibiotics for dairy cattle. Much of this work was with calves and although little benefit was demonstrated when antibiotics were fed to adult animals, the use of proper antibiotics has greatly reduced the incidence of calf scours and ensuing mortality.

Studies at the Kansas Station on the effect of various antibiotics on health, growth and feed utilization have provided answers to questions such as: What are the benefits of feeding antibiotics? When should antibiotics be fed to calves? How long should antibiotic feeding be continued? What is the effect of withdrawal of antibiotics from the ration? Are pure forms of antibiotics more beneficial than crude products? What is the best method and level of antibiotic feeding? What are some of the possibilities of antibiotics reacting with other nutrients or feed ingredients?

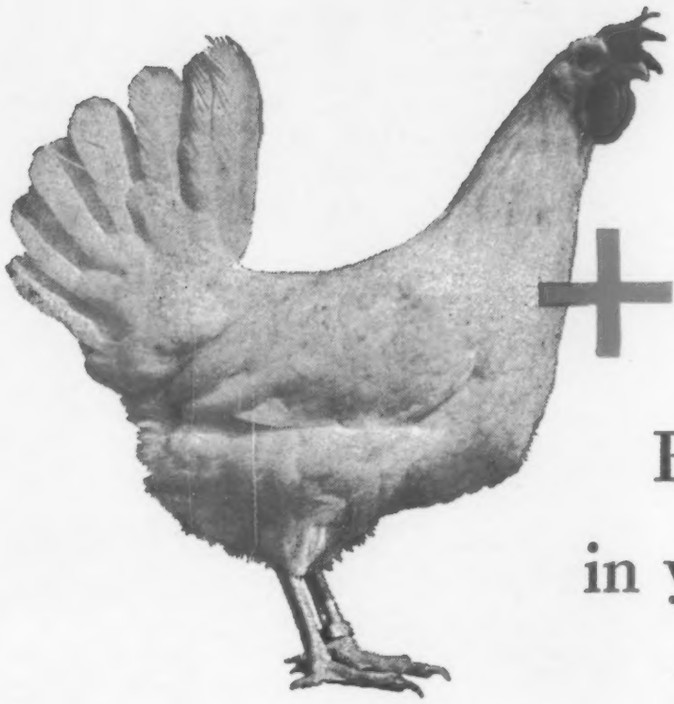
One of the most interesting aspects of these studies has been the determination of the mode of action of antibiotics. It was found that with the feeding of antibiotics there is an apparent change in the intestinal bacteria making them more susceptible to phagocytosis.

Roughage-Concentrate

The work of Dr. G. M. Ward and associates on roughage-concentrate relationships has provided much needed information. For several years the Kansas station has studied the effects of feed treatments such as pelleting on the production and composition of milk. Milk of low fat content is produced when cows are fed low roughage-high concentrate rations, or finely ground and/or pelleted roughages. Results of these studies indicate that rations which depress fat content of milk increase solids not fat and protein contents of milk. The economic aspects of certain of these systems of feeding are under study as well as the physiological basis for these changes.

The relationship of salivation to low fat milk production is being investigated. Cooperative studies with the department of flour and feed milling industries are attempting to define and evaluate particle size and feed treatments such as pelleting conditions of temperature and pressure as they affect rumen function and milk production. In cooperation with the department of bacteriology, rumen metabolism is being critically studied using C_{14} labelled cellulose. It is hoped that answers to these

(Turn to NORTON, page 44)



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Put more eggs in your layer feeds with Dawe's Vitamelk

There are more eggs in a ton and more profit for the poultryman, when you fortify your layer feeds with Vitamelk Egg. This specialized Vitamelk, developed by Dawe's Nutrition Research and Technical Service, provides the micronutrients essential to sustained high-level production.

Vitamelk Egg is a Dawe's quality-controlled premix of vitamins, trace minerals and unidentified factors at research-proved levels for high-efficiency layer feed performance. In Vitamelk Egg, you have full fortification in a single package. This simplifies your job of fortifying to make your feeds more productive.

More eggs in a ton of feed mean lower cost per dozen. This is the payoff for the poultryman. It is your payoff, too, because that is the basis on which your feeds are judged.

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biotics in combination with certain drugs and feed additives.

Vitamin A Studies

The role of carotenoid pigments and related compounds in poultry nutrition is being studied. Much of this work is in cooperation with Dr. D. B. Parrish of the department of biochemistry. The effects of feeding suboptimum levels of different forms of vitamin A in the diet of both hens and growing chicks are under investigation. Feeding varying high levels of vitamin A and pro-vitamin A during the natural stress of summer heat has resulted in more eggs, larger eggs and more efficient use of feed.

It also has been demonstrated that newly hatched chicks as well as laying hens can satisfactorily utilize carotene from alfalfa as a sole source of vitamin A. The vitamin A potency of carotene is high quality alfalfa meal, the effect of anti-vitamin A as supplied in alfalfa meal and the effect of drugs and certain feed additives on the utilization of vitamin A are all phases of the investigations on vitamin A that are currently in progress.

Recent work has shown that pullets housed on the floor and fed a ration using $CaCO_3$ as a source of supplemental calcium laid more and larger eggs with a higher percentage of shell than similar lots fed calcium lactate as the source of supplemental calcium. Plans are to initiate studies on the effects of feeding various levels of calcium on egg shell strength, rate of production and feed conversion.

COX

(Continued from page 42)

made of the efficiency of utilization of sorghum grain processed by rolling, fine and coarse grinding and of pelleting. Any changes on volatile fatty acid production induced as a result of the method of processing also will be noted.

Physical balance studies of lamb fattening rations—This is one of the earliest studies begun of the effects of varying physical balance independent of chemical aspects of rations. Varying ratios of concentration to bulkiness in rations with chemical balance held as nearly constant as possible have been tested for lambs and cattle, and have contributed much to our knowledge of ruminant digestion. Not only the quantity of fiber in the ration, but also its form, has been studied through pelleting, fine grinding, chopping, etc.

Investigations of milk fat lamb production practices (Colby Branch Station)—This recently begun project thus far has been largely confined to tests of pre-flushing and flushing, pasture of rye, buffalo grass, and other forages in the rations of both ewes and suckling lambs, and various concentrates. Effects are noted on lambing percentage, rate of growth, milk production, etc.

Lamb feeding investigations (Garden City Branch Station)—This is another extensive and long-term project. It is concerned primarily with methods of processing and compounding of rations of sorghum grain and forage, and utilizing winter wheat pasture in fattening lambs for market.

The effect of the level of dietary iron upon carcass quality of pork, beef and lamb—This is a new project confined to swine to date. It is hoped that findings will contribute to better evaluation of dietary iron requirements for good quality meat and for growth performance.

Metabolism of carotenoid pigments and vitamin A in swine—Tests have been under way to study the effect of pelleting feed on utilization of vitamin A activity as supplied by yellow corn, and the effect of fat added to the feed formula on utilization of vitamin A activity as supplied by carotene of alfalfa meal.

Swine feeding investigations—A project which has run for more than 40 years. It has been devoted to comparative tests of sorghum grain, corn, wheat and barley, many protein and mineral supplements, pasture and roughage in pig rations, of soaking, grinding, rolling and of numerous antibiotics.

Additional nutrition experiments planned—1. Inherited metabolic problems in animal species.

2. Nutritional-reproductive problems in laboratory and domestic animals.

3. Utilization of native Kansas grasses by beef cows.

4. Vitamin A in beef cattle rations.

5. Response of inbred lines of guinea pigs to two levels of protein.

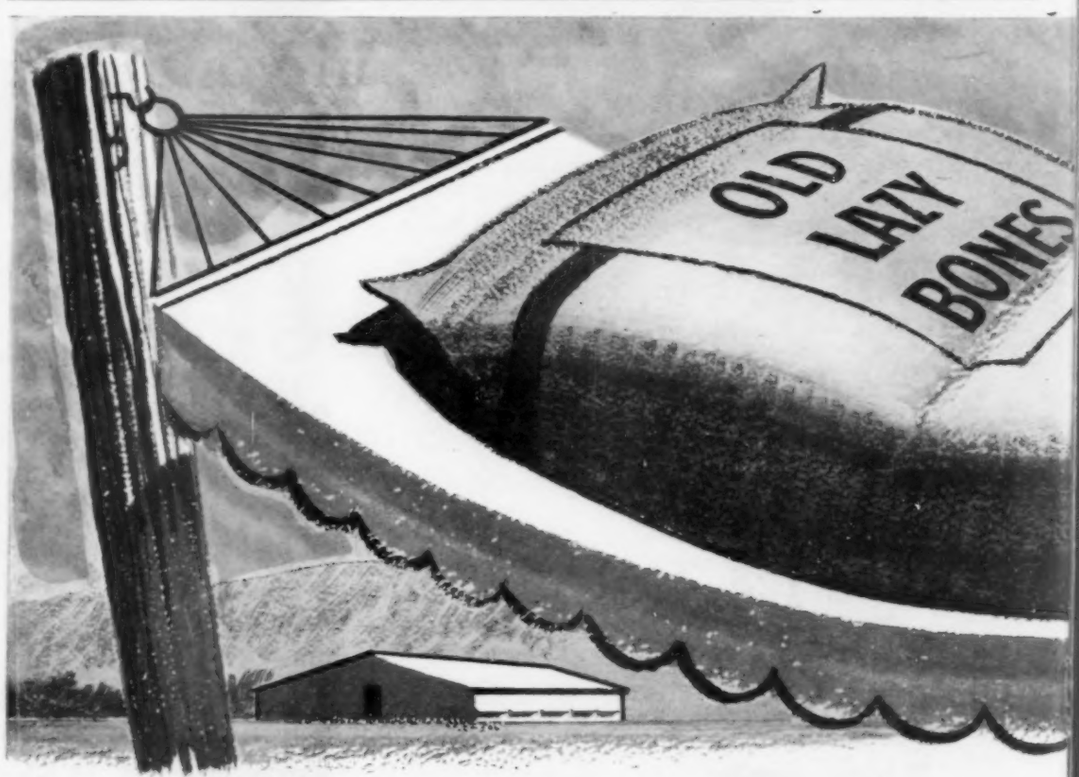
NORTON

(Continued from page 42)

problems will result in systems of feeding that will lend themselves more readily to mechanized feeding, will result in more efficient production of milk and will produce milk of more desirable composition.

Perhaps no problem in livestock management has been more persistent and widespread than bloat. Dr. Bartley and co-workers have produced some thought provoking results in recent investigations which have suggested possible means of control. Work with identical twins indicates that animals react differently to conditions that cause bloat which suggests that susceptibility to bloat is inherited. Considerable evidence has been accumulated to support the hypothesis that saliva has a beneficial role in bloat. Specifically the mucin in saliva is suggested as the active antifoaming component. Further studies indicate that bloat may result when certain mucinolytic organisms destroy what salivary mucin is secreted. Although several approaches to control are possible, the final answer which will likely relate closely to microorganisms is not yet available.

In a series of experiments on the nutrition and management of dry cows, Dr. F. C. Fountaine has shown



Are Your "High Level" Broiler

If they are, you can restore their effectiveness through the use of BACIFERM, the feed supplement with zinc bacitracin. Here's why:

Repeated use of certain antibiotics in broiler feeds has resulted in bacterial strains that no longer respond to antibiotic therapy. Recent studies show that this resistance to antibiotics builds rapidly and persists throughout the broiler cycle. Merely raising the level of the antibiotic in the feed seems to have little effect.

Adding BACIFERM to the prestarter interrupts this bacterial resistance and promotes growth of healthy intestinal microflora. The accompanying table shows how introduction of BACIFERM drastically reduces bacterial resistance to a tetracycline-type antibiotic.

BACIFERM's double-barreled action (attacking the bacterial cell wall and upsetting bacterial protein synthesis) reduces the tendency for bacteria to resist antibiotics. It means that in disease outbreaks subsequent to the BACIFERM prestarter feed period BACIFERM, as well as other antibiotics, may be used as a therapy.

BACIFERM with zinc bacitracin has proven effective in lowering broiler mortality and improving feed efficiency when added to the prestarter. Feed processors can use BACIFERM with confidence. It is a sound, stable medication that can be counted on every time for effective economical suppression of bacterial invaders.

Write for samples and the new brochure, "BACIFERM IN BROILER RATIONS."

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there is no apparent relationship between the kind and amount of feed consumed during the dry period and the incidence or severity of parturient mammary edema of dairy cows. It is now recommended that dairy cows be fed liberally during the dry period and in early lactation. Corn or sorghum grains, or mixtures containing large amounts of these feeds are suitable for dry cows.

In tests with milking cows it has been found that parathion fed, either in capsules or as residues on alfalfa hay, in amounts greater than those likely to be ingested under practical feeding conditions, was not toxic to the animal, nor was it excreted in milk in detectible amounts. Malathion likewise was not toxic, nor excreted in milk.

Calf Starters

In experiments on factors affecting the palatability of calf starters, it was found that young dairy calves prefer starters containing coarsely ground grains to those containing finely ground grain. Flaked sorghum grain was palatable. Starters made of ground grains were preferred to those which were pelleted. Further work on self-feeding hay and starter to calves is being investigated.

Several experiments were conducted to study the effects of feeding diethylstilbestrol to dairy cattle. The inclusion of 10 mg. of stilbestrol per 1000 lb. body weight increased milk production in identical twins during the first experimental lactation, but not in subsequent lactation. Stilbestrol in amounts up to 15 mg. per 1000 lb. body weight was not harmful to reproduction. Stilbestrol was not beneficial to growing calves and heifers.

In experiments testing the effects of various milling procedures of sorghum grain, it was found that cows produced slightly but significantly more milk when fed pelleted grain sorghum than when fed either cold-rolled, steam-rolled, or enzyme-supplemented sorghum grain. As the cows were fed normal amounts of roughage, pelleted grain did not cause a reduction in butterfat test. Grain sorghum was found to be almost equal (98%) to corn as a grain for dairy cows. When cows were fed alfalfa hay, grain sorghum alone was equal to concentrate mixtures containing soybean meal for cows producing as much as 60 to 70 lb. of 4% fat-corrected milk.

NEW WASHINGTON FIRM

GREENACRES, WASH.—Gorton's Poultry & Produce Co., Inc., has filed articles of incorporation listing $50,000 authorized capitalization to engage in the manufacture and sale of poultry and domestic animal feeds. Incorporators are Merl Gorton, Sr., and Erwin Gorton of Greenacres and Merl Gorton, Jr., of Spokane.

"He does his best work under pressure."

West Coast Group Asks Unified Voice Against Control Steps

LOS ANGELES — A West Coast group has called for unified efforts in speaking out against poultry industry controls and the use of government authority in formulating a turkey control proposal.

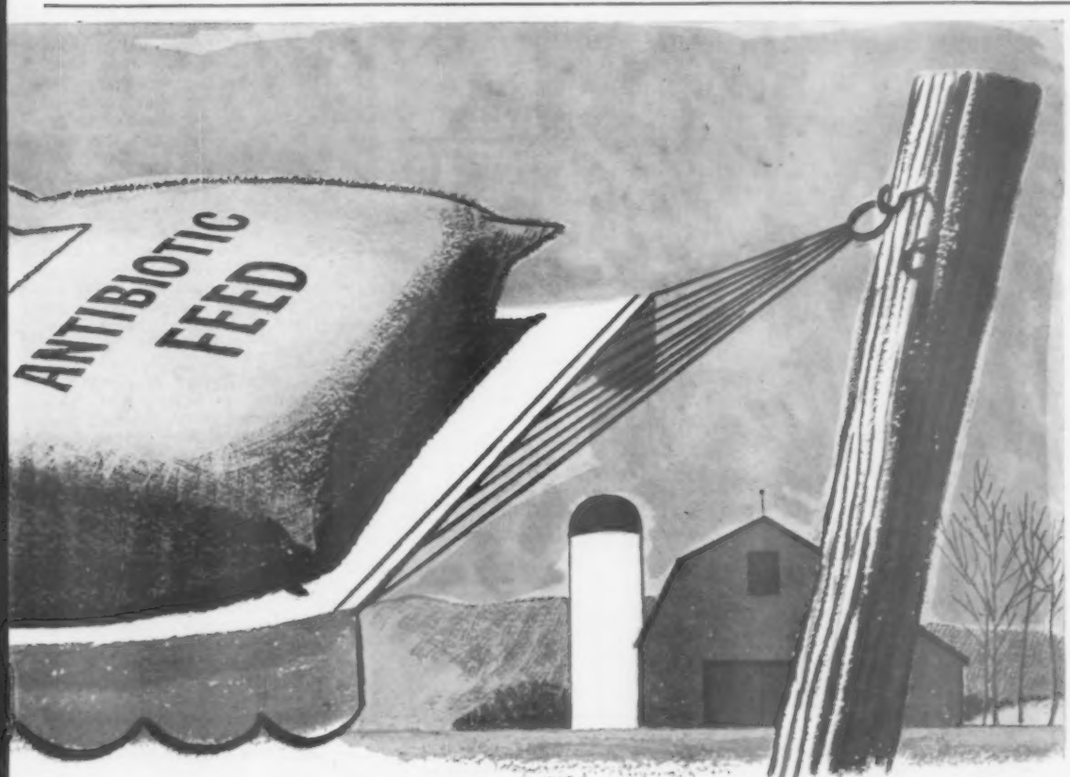
A Pacific Dairy and Poultry Assn. bulletin refers to the legislative provision authorizing turkey marketing orders as the "first drastic step" in a move toward federal controls on the poultry industry. It was noted that turkey industry spokesmen "requested the secretary of agriculture to appoint a drafting committee to draw up a national marketing order for turkeys (meat and hatching eggs). This request, boiled down, was an action that in essence asked the secretary to start the gears rolling through the authority invested in the Agricultural Act of 1961, which is at the discretionary disposal of the secretary of agriculture.

"Following this, the fryer-broiler people got the government intervention idea; now it has spread to the shell egg industry.

"Yet there has not been one organized group that has petitioned the secretary of agriculture to NOT exercise the authority invested in the 1961 Agricultural Act regarding controls for turkey hatching eggs and turkey meat.

"By creating a 'stay' in the discretionary authority which the secretary has in formulating the viscera of a control program for turkeys and turkey hatching eggs, a 'back-firing effect' is staged in holding the flames of government intervention from attacking other portions of the poultry industry, namely broiler-fryers and the shell egg industry.

"It is very necessary that a unified effort on behalf of all segments of our poultry industry be made in forming a strong NO imprint regarding the secretary's using this discretionary authority to formulate a control proposal for turkeys and turkey hatching eggs. It is about time the poultry industry unifies its efforts and brings this situation back into focus through a basic action of this nature."



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	Percent resistance at weekly intervals**				
Antibiotic levels fed first 3 weeks only	2	3	4	6	8
500g/T tetracycline-type	74%	71%	39%	16%	5%
200g/T tetracycline-type	38%	54%	43%	9%	0%
150g/T tetracycline-type plus 50g/T Baciferm	8%	11%	9%	6%	1%
100g/T tetracycline-type plus 100g/T Baciferm	10%	7%	5%	3%	2%
200g/T Baciferm	**0%**	**0%**	**0%**	**0%**	**0%**

*Potentiation gives average blood levels of 0.5 mcg/ml.
**No data were obtained during first week.

In this test, the antibiotics were fed for the first three weeks. Bacterial resistance was measured at weekly intervals.

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Sees Spring Pig Crop Up 2-3%

WASHINGTON—U.S. Department of Agriculture is expecting a 2-3% increase in spring hog production, an increase which would likely lead to lower prices in 1962, but not to a market collapse.

If the spring crop should expand moderately, pork supplies would not be excessive and hog production would still be relatively profitable next year, USDA reports. Prices are expected to be below a year earlier through the first half of 1962.

Hog producers in the 10 Corn Belt states reported in September they plan a 4% increase in December-February farrowings, the first three months of the 1962 spring season. If the trend toward earlier farrowings is resumed in 1962, the total spring crop would be up less than 4%, and the earlier trend seems likely in view of the relatively late farrowings last year.

Farrowing intentions may overstate the actual increase in the spring pig crop, particularly if an earlier pattern of farrowing occurs. This year, much of the gain in the size of the pig crop was due to an increase in the number of pigs saved per litter. This, in turn, was associated in part with the concentration of farrowings during months in which weather was generally more favorable.

The September pig crop report has been a reliable indicator of the trend in total spring farrowings. The Corn Belt states reporting have correctly indicated the direction of change in the total spring crop from their intentions for December - February. States outside the Corn Belt have generally made smaller changes than the Corn Belt states.

The prediction of relatively small farrowings increase is based on several factors, one being the hog-corn price ratio, which has continued between 15-17 bu. corn equal in value to 100 lb. live hog since June, when producers stated they would keep 2% more fall sows this year compared to last. This ratio is expected to decline to the 15-16 range this fall, below last fall, but still favorable.

Higher feed costs and smaller quantities readily available for feeding may be deterrents to increasing hog production next spring. However, it is estimated that about 2 billion bushels of this year's corn crop—production by nonparticipants in the feed grain program and production above average yield by nonparticipants—will not be eligible for price support.

Much of this corn is being produced in the areas of the Corn Belt where farmers traditionally feed most of their corn crop. Therefore, the feed cost and supply situation probably will not play a large part in farmers' decisions on hog production next spring.

Whereas a 2-3% spring crop increase is estimated, an increase of 12% would be necessary to reach the 1959 spring crop, but population has gained 5% since that time, a factor that would temper the impact of larger pork supplies.

USDA also reports prices of feed grains probably will average higher this fall and winter than a year earlier. The smaller feed grain crop and higher 1961 price supports, averaging about 1960 levels for the four feed grains, will likely put an upward pressure on prices. However, improvement in prospect for the 1961 corn crop and corn available for sale under the 1961 feed grain program, are expected to result in a moderate decline in corn prices with the harvesting of the 1961 crop. Corn prices are expected to average higher this fall than in the fall of 1960.

High protein feed supplies in 1961-62 probably will be a little above those of 1960-61 as a result of the prospective larger soybean crush. Prices of high-protein feeds may average a little lower than in 1960-61. They are not expected to rise as much during the winter and spring as in 1960-61, when they increased 30% from November to May.

The 1961 corn supply of 3,520 million bushels is 371 million smaller than last year. Supplies of other feed grains are also smaller than last year. The oat supply is down 7%, barley is down 9%, and the sorghum grain crop, estimated on Sept. 1 at 480 million bushels is 21% below last year. The latter is nearly offset by the larger carryover, resulting in a decrease of only 1% in the total supply.

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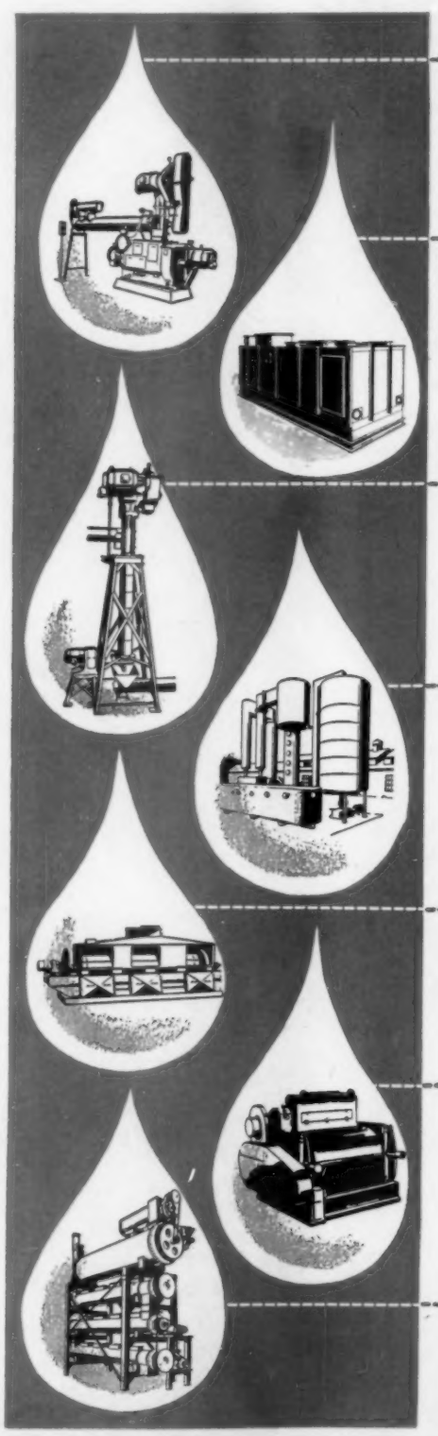
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Poultrymen Told Plenty of Good Broiler Crosses Are Available

By Special Correspondent

GEORGETOWN, MD.—The broiler industry has plenty of good broiler crosses.

So said James Nicholson, University of Maryland extension poultry specialist, in a report on six cross studies he has conducted. This report on two years' work was part of a regional poultry meeting held here.

Four popular male lines have been crossed with six female lines. Mr. Nicholson said that none of the cross combinations has produced inferior average weights or feed conversions.

There are so many good crosses available that producers of hatching eggs can look for birds that will give high hatchability and other desirable qualities, he commented.

LITTER STUDY—Frank D'Armi, who is in charge of the Delaware experimental flocks, presented some findings he has made. Five types of litter have been under study. They are: Saw dust, cobs, peat moss, shavings and wood chips.

Crushed corn cobs gave the lowest per cent of grade A's due to the number of breast blisters, he said. The highest average weight was produced on old litter, the feed efficiency was about the same for both old and new litter, and mortality was slightly higher on the old litter. The old litter gave more grade A's and fewer birds infected with leukosis. Worms were more of a problem on the old litter, he commented.

Mr. D'Armi concluded that the use of old litter is worth much consideration.

SALT REQUIREMENT OF BROILERS—At Virginia Polytechnic Institute, Dr. H. S. Siegel has been doing research on the amount of salt required by broilers. He reported that he found that an optimum amount was between 0.4 and 0.8%. Salt is essential for good growth and health but an excess is toxic, he said.

LIGHT REQUIREMENTS—Daniel Palmer, University of Delaware, has been working on the light requirements of birds. Less than one foot candle gave good average weights, he said. Five, 10 or 15 foot candles did not give as good results.

A pen of birds with less than one foot candle of light and a 7½ watt bulb, to give enough light for the birds to see how to find the feeders, produced an average weight of 3.82 lb. Five foot candles and natural light produced birds with a weight of 3.67 lb.

INTERRELATIONSHIPS OF FORM OF FEED, TYPE OF FEEDER, AND WATER SPACE ALLOWANCE IN VARIOUS BROILER CROSSES — This was the topic of Dr. Paul Siegel, also of VPI.

He made the following comments:

Increasing humidity during the first few weeks of a bird's life has no influence on body weight, feed conversion or feathering.

With trough feeders and twice daily feedings, better growth was obtained with 1.5 linear inches of trough space per bird up to three weeks and 3 inches thereafter, than with either lesser or greater amounts of feeder space. This amounts to 25 5-ft. feeders per 1,000 chicks after three weeks.

On a 1,000 bird basis, 18 14½-in. tube feeders resulted in broiler weights equal to those obtained when additional tube feeders were provided.

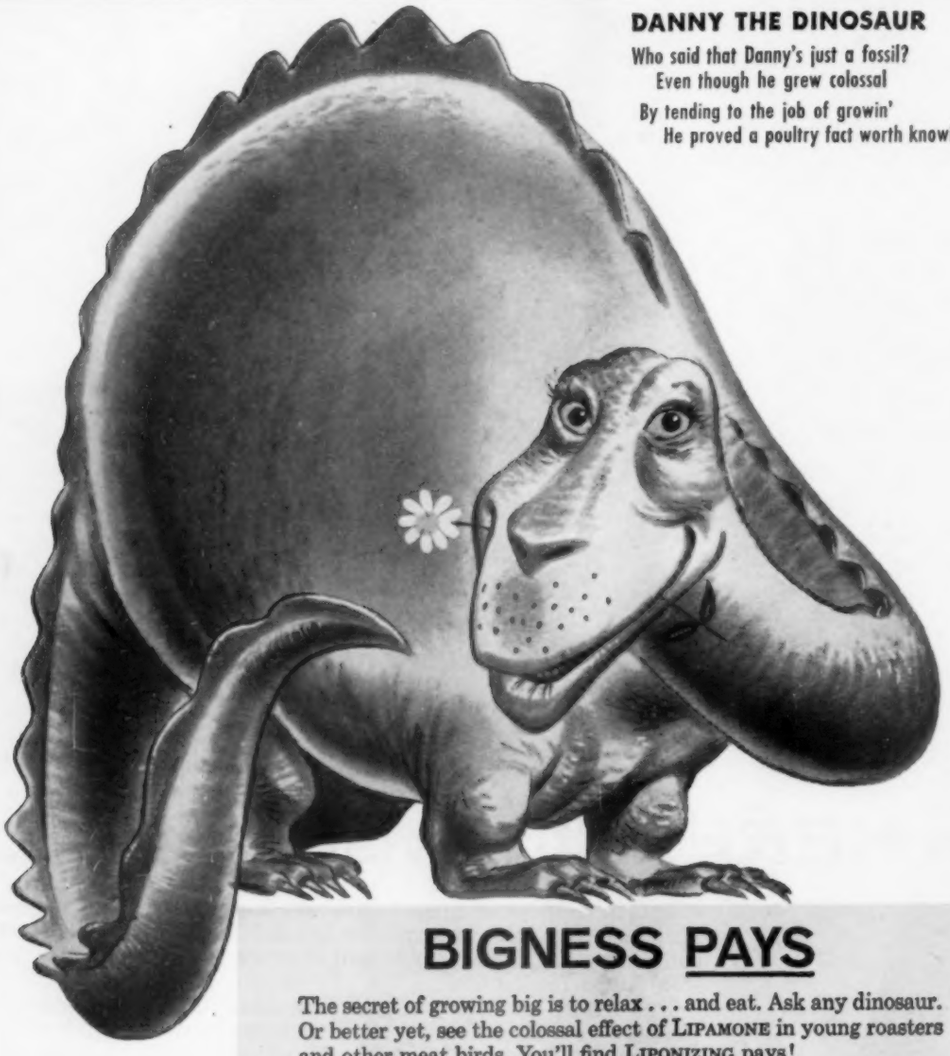
Dr. Siegel said no difference was observed in the broiler weights of chickens fed from either tubes or troughs. Feed conversion, however, was slightly better in pens of trough fed broilers.

One-half inch (three 8-ft. units per 1,000 birds) of water space per broiler is sufficient during the cooler months. Significantly better growth was obtained from 1 in. of water space during the summer months.

Crumbles gave significantly better growth and feed conversion than mash.

Certain management practices interact with sex and stocks, thus indicating the day may come with recommendatons for all-female flocks that will be different from those for all-male flocks, he commented. Also management recommendations for one broiler cross may be different from those for another.

COWCULATOR—Dr. Frank M. Crane, nutritionist with Land O'Lakes Creameries, Inc., Minneapolis, demonstrated the new "Cowculator" at the Minnesota Nutrition Conference. This electronic calculating device, developed by Dr. C. D. Caskey of Cooperative Mills, is used to determine how much concentrate a dairyman should feed to his cows to earn the most profit. Many different price, production, nutrition and other factors are involved in the calculations that can be handled by the computer. (Feedstuffs, June 17.)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Massey-Ferguson Buys Wafering Unit Rights

RACINE, WIS. — World manufacturing and marketing rights to a hay wafering machine have been acquired by Massey-Ferguson, according to Albert A. Thornbrough, president.

The machine, which compresses hay into wafers approximately 2 by 2 in., is described as "the key to a new system of making hay." With the system, Mr. Thornbrough said, hay can be cut, cured, packaged, loaded, stored, unloaded and fed by mechanical means.

Massey-Ferguson plans to market the machine in the U.S., Canada and other areas of the world where hay making has been highly mechanized.

Rights were purchased from Vernon J. Lundell of Lundell Manufacturing Co., Inc., Cherokee, Iowa. The Lundell company will continue to manufacture its own machine in the U.S. under license from Massey-Ferguson, and will market them under its own trademark through its regular retail channels.

Wafers produced by the machine weigh approximately 27 lb. per cubic foot, compared with 12 to 14 lb. for baled hay and 3½ lb. to 5 lb. for loose hay.

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But, in the past few years two other types of feeds have moved up fast in importance. They are farrowing and lactation feeds containing AUREOMYCIN for sows.

Alert feed manufacturers have recognized that each of these feeds *belongs* in a properly-managed feeding program. Research and field observations have convinced these feed manufacturers that special protection is needed for sows before, during and after farrowing if sows are to produce more healthy pigs and raise them to weaning.

AUREOMYCIN provides this special protection. Unlike some other antibiotics and drugs, AUREOMYCIN is *absorbed from the intestinal tract into the blood stream and into the body tissues.* This means AUREOMYCIN is *made to order* for sows' rations. It provides an activity against enteritis and other secondary bacterial infections unequaled by any other drug.

Three-step feeding program

So, many feed manufacturers are now promoting farrowing and lactation feeds containing AUREOMYCIN right along with starter feeds. This is their three-step program:

(1) *Farrowing feed* specially designed to help prevent constipation, mastitis, metritis and enteritis (scours). It contains AUREOMYCIN at 200 grams per ton of ration and is fed 7 to 14 days before farrowing and 7 days after farrowing. AUREOMYCIN helps eliminate enteritis organisms from sows and from their environments—prevents sows from passing the infection on to their newborn pigs.

(2) *Lactation feed* designed to supply extra energy, proteins, minerals and vitamins needed to maintain the strength of sows and their pigs. It contains AUREOMYCIN at 50 grams per ton of total ration and is fed throughout the lactation period. AUREOMYCIN keeps sows healthy and reduces scouring.

(3) *Starter feed* designed to get pigs off to a fast start and reduce the effect of stresses caused by moving, handling, weaning, vaccination and bad weather. It contains AUREOMYCIN at 50 to 100 grams per ton of complete feed, and is recommended for feeding to pigs until at least a week past vaccination. AUREOMYCIN prevents scours, saves pigs, helps eliminate runts, keeps pigs gaining fast.

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Number of sows	12	12	
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Total number pigs weaned	81	92	9 pigs
Av. 8-week weight (lb.)	31	35	4 lb.
Total litter weight (lb.)	214	268	54 lb.

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Broiler Production Controls Involve Complex Factors, Says Farm Economist

CHICAGO—There are many complex factors which would have to be studied carefully if a federal program were to be developed to control broiler production as a means of solving the low price problem existing in that industry, says Dr. William E. McDaniel, chairman of the University of Delaware's department of agricultural economics.

Speaking before the board of directors of the Institute of American Poultry Industries here, Dr. McDaniel said that the complex chain of broiler production, made up of different independent links or industry segments, would make it extremely difficult to get voluntary industry-wide acceptance of government controls.

Citing chronic low prices that have plagued the broiler industry during most of 1961, Dr. McDaniel said that growers in many commercial broiler areas throughout the U.S. are discussing possible government controls on production as a means of raising prices. However, he pointed out that broiler producers in his area, the Delmarva peninsula, have gone on record as being opposed to government controls.

Unique, Complex

He described the broiler industry as "unique and complex" compared to other segments of agriculture such as the production of milk, feed grains and wheat, all of which are subject to some government control on production. The broiler industry is composed of various segments—egg producers, hatcheries, feed dealers, growers and processors—many of whom, but not all, operate independently of each other. "The difficult problem is to devise a method of control that will be acceptable to all of these segments of the industry and acceptable to Congress as well," Dr. McDaniel declared.

Another factor that will have to be weighed carefully if a control program is established, Dr. McDaniel emphasized, is the likelihood that as broiler prices go up, consumers will buy more red meats. This will encourage producers of beef, pork and mutton to increase their herds and flocks, and in two to four years, the increased supply of red meats will cause broiler prices to drop. A satisfactory answer to this problem will have to be found if a federal program is to have any long-range beneficial effect to the broiler industry, the Delaware economist pointed out.

Still other factors that will need study include the question of what basis will be used to determine a newcomer's quota in a control system where quotas likely are based on the past history of each individual business, or how businesses with quotas can increase in size in order to increase efficiency, Dr. McDaniel said. "And finally, there is the tendency of control programs to result in a uniform price level throughout the country, while regional cost advantages may remain," he pointed out.

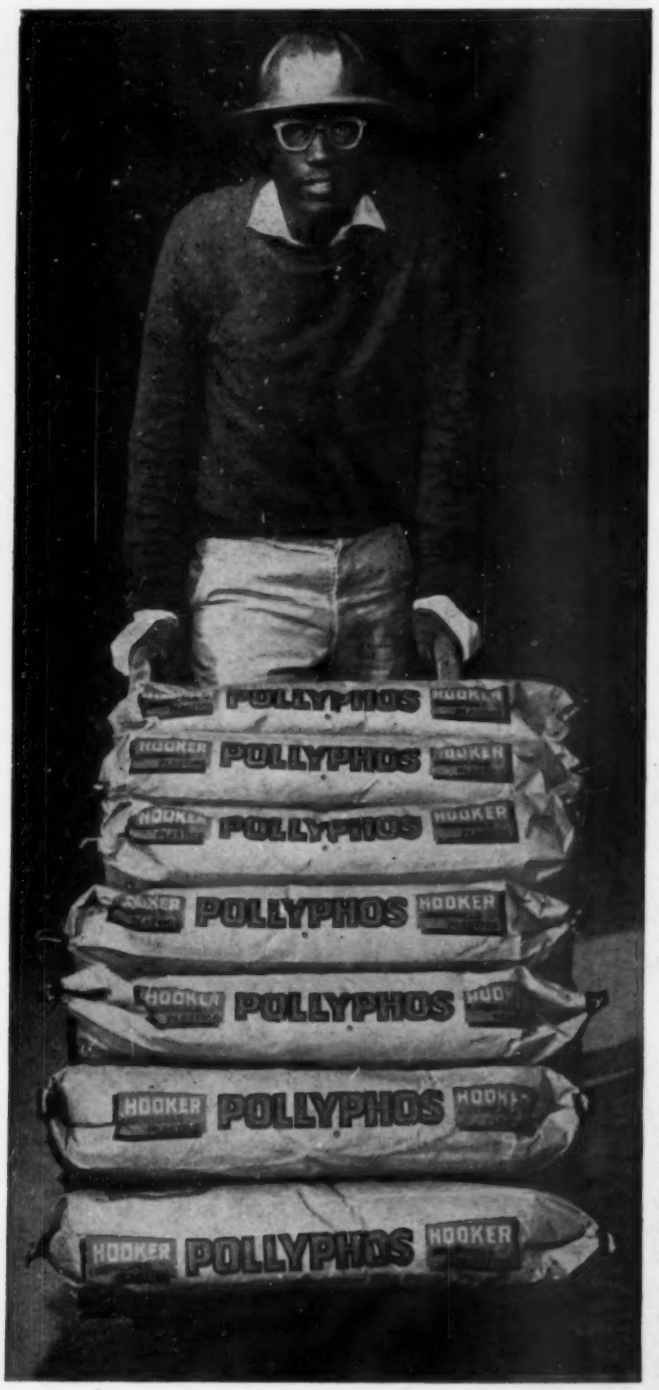
Types of Controls

Dr. McDaniel discussed with the poultry leaders various types of federal controls now being used on different agricultural commodities. They included:

(1) Marketing agreement—a voluntary contract between the Secretary of Agriculture and the handlers of a particular commodity, designed to raise prices to producers. "The weakness here," according to Dr. McDaniel, "is that some producers or handlers may not sign the contract. As marketings decrease and prices go up, non-signers may increase production which again would force prices down, defeating the purpose of the agreement."

(2) Marketing order—a compulsory program, issued by the Secretary of Agriculture, with provisions binding on all handlers in a specified production or marketing area. The Delaware economist said, "Such orders are now in effect on milk in many areas, including most of the metropolitan areas of the East Coast. Marketing orders do not establish prices, but influence them through control of supply and quality of product reaching market."

(3) Price supports—the government actually buys the product from the producer or loans money to him on the stored product and will accept the stored product in lieu of repayment of the loan. Dr. McDaniel said, "Price support programs are of various types, ranging from the voluntary compliance type used in the current feed grain program, to the compulsory type (after grower approval through referendum) used to control wheat production. In other types of price support programs, the government buys on the open market a commodity in excess supply, diverting it to storage or to such uses as school lunch, welfare or foreign assistance. Pork, potatoes and other comodities have been purchased under this program when the Secretary of Agriculture considered them to be in excess supply."



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Study Favors Use of Mine for Grain Storage

WEEKS ISLAND, LA.—A study conducted by Sampson Construction Co., Inc., and Western Grain, Inc., shows that use of the salt mine at Weeks Island in Iberia Parish for grain storage "could and should be utilized to the full extent that it is economically feasible to do so."

Rep. Edwin E. Willis of the third Louisiana district, reporting on the study, said potential storage capacity of the mine, which is owned by the Morton Salt Co., Chicago, is placed at more than 100 million bushels.

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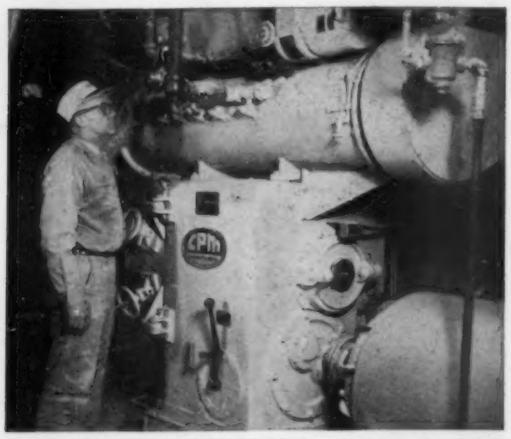

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GRAIN ROLLING

For Efficiency in: Production Feeding Sales

By Thomas B. Anderson
Gooch Feed Mills, Salina, Kansas

Grain processing is a vital factor in the custom feed milling operation. The most commonly used methods of processing grains to be mixed into finished feeds are by hammermills and roller mills. This discussion is on the use of roller mills which deals with the operation of the machine itself, the texture of the grains going out and the advantages of this type of processed grain for various classes of poultry and livestock.

Why Roll Grain? Grains are rolled to keep them not only whole as possible, but to also break up the endosperm which allows the grain to be more digestible to the animal. Rolled grains will not blow away in the feedlot as does pulverized grain. It also enhances the appearance to the farmer and assures him that he received what he paid for. Rolling keeps the grain intact which has a particular advantage in "high concentrate" feedlot rations since the husks function as roughage. This is particularly true when barley is fed without any additional roughage.

Actual feeding trials have proven rolled grains to be more efficiently utilized when fed to feedlot cattle, dairy cattle and swine. The exception is grains to be mixed with a supplement for poultry rations where there is a need for finely ground particles.

Steamed rolled grains are superior to dry rolled grains due to the fact that the grains are in larger particles with more bulk, which adds to their appearance and causes less wastage in the feedlot. The husks on dry rolled grain tend to separate and either blow away or cause the farmer to suspect that grain screenings have been added.

There is also evidence that steaming grain stimulates the enzyme activity. This in turn aids digestion and may also aid in weight gains and feed efficiency of the grain. Since good quality steam rolled grain is difficult to process, I will explain the procedure step by step:

1. CLEANING—All grain to be rolled should pass through a good grain cleaner to remove burrs, husks, sand and other extraneous materials. A magnet should be installed directly over the steamer to catch tramp iron.

2. CONDITIONING OF THE GRAIN—It is most important that the grain be conditioned properly to obtain a product which is whole and fine textured. Select a steamer with sufficient coils, preferably copper, which will heat the grain from 160 to 180° F. with enough live steam injectors to bring the moisture up to approximately 16-18%. The steamers should have sufficient capacity to hold the grain for at least 10 minutes. Although it is rather expensive, stainless steel housings will pay dividends as black iron lasts only for a year or so. Stainless steel is permanent.

3. STEAM REQUIREMENTS—The conditioning process of grain is related to the percentage of moisture required to obtain satisfactory processing. An experienced operator will be able to determine by observation and examination the amount of additional moisture required to obtain the desired product. One of the secrets to introducing the right amount of moisture into the grain is to have the steam as dry as possible. Moisture separators and traps should be in line just before the steam enters the conditioner. On an average we introduce 3% of dry steam into the conditioner. We calculate our boiler horsepower requirements at .134 h.p. per 100 lb. of grain per hour.

4. ROLLER MILL—Grain rolling rolls vary in diameter from 9 in. to 15 in. A good quality product can be produced on any of these diameters if capacity is not a factor. I have seen an excellent product produced on 10 in. by 36 in. rolls with a capacity of 150 to 200 bu. per hour on 72 lineal inches. Corrugations vary from 12 to 24 cuts per inch with ¼ in. spiral per foot depending on the type of grain to be rolled and whether it is dry or steam conditioned. A Stevens or V-type cut is preferred.

Since the grain is to remain whole the rolls need have no differential or may run at the same speed. The drive may be set up in a number of ways; however, two motors running in opposite directions are usually the simplest and easiest installation to maintain. This drive eliminates gears, chains, oil baths, etc.

The roll housings are usually wood or black iron. However, I recommend stainless steel because it is more economical in the long run. Steam combined with grain sets up an oxidation which disintegrates most metals very rapidly. A suction on the roll helps to keep it dry and eliminates a considerable amount of dusting.

5. DRIER—A drier for steam rolled grain is essential and is usually one piece of equipment that is overlooked. In order to eliminate mold in stored rolled grain, moisture must be held to not more than 13%. A California type cooler with steam finned coils on the air inlet side has proved to be a simple and efficient way to dry the rolled grain to proper storage conditions. This drier should be followed by a cooler of the same type but without steam coils. Each unit should have its own fan. Below are listed temperatures and moisture conditions of grain as it enters the conditioner and comes out of the cooler:

	Temperature degrees	Moisture %
Corn to conditioner ...	80	12.8
Corn to roll	180	15.1
Corn out of cooler	85	11.8
Barley to conditioner ..	85	13.2
Barley to steam roll...	175	16.32
Barley out of cooler ..	80	12.7
Oats to conditioner ...	80	11.6
Oats to roll	160	14.4
Oats out of cooler	80	11.2

You can see from the figures above that it is possible to steam roll grain and to deliver it for commercial feed in good storage condition.

EDITOR'S NOTE: Mr. Anderson of the Gooch Feed Mill division of Western Star Mill Co., Salina, Kansas, explains why grain is rolled and describes the steps in processing good quality steam rolled grain in this article which was presented as a talk during the Small Mill Workshop conducted in conjunction with the 1961 Feed Production School at the Continental Hotel in Kansas City.

DIES IN ILLINOIS

ELMHURST, ILL.—Mrs. Nellie E. Maas, 76, mother of Russell B. Maas, president, Screw Conveyor Corp., Hammond, Ind., died Oct. 5 in Memorial Hospital of DuPage County. In addition to Mr. Maas, survivors include her husband, Arthur M., and another son, Ellis P.

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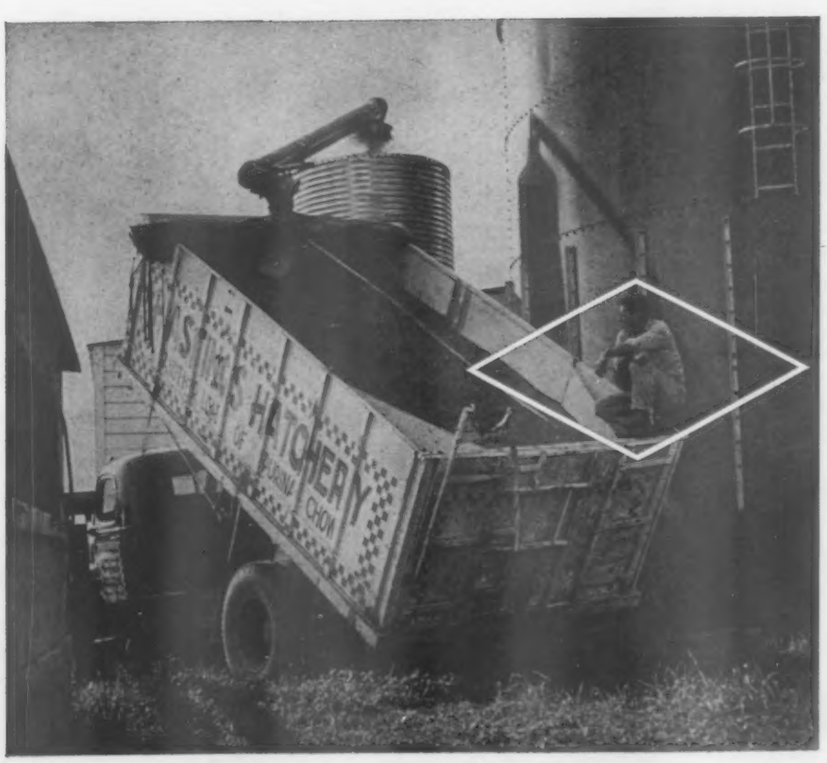

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JOE BROOKS

BY AL P. NELSON

Employees Should Know What's Happening

It was lunch hour at the feed mill. One man operated the mill and the rest of the crew sat in the employee quarters eating hard boiled eggs and salting them as they nibbled. Others ate ham on rye sandwiches and some gnawed happily on cold chicken legs.

After the desserts and coffee had been disposed of, speech was resumed.

"Well, Milt," asked Butterball, "any interesting dates lately?"

Milt grinned wickedly. "I don't dare tell you, Butterball, you are too young."

"Good thing Pop Henley is running the mill during noon hour today," Smiley Johnson retorted. "He would split an intestine if he were here and heard you mention women."

"If I get that crotchety at age seventy," said Milt, "I hope somebody puts a pill in my vodka to make me sleep a hundred years. Don't women add something to life?"

No one said him nay, but Mike Reitci, the studious one, who had been reading a trade journal and a farm paper, looked up. "Hey, what do you know!" he said excitedly. "Illinois farmers have tripled the use of fertilizer since 1945 and are getting correspondingly bigger crops. I didn't know that."

Milt Peters grunted. "What's so exciting about that, Mike?"

Mike turned a look of scorn upon Milt. "What's exciting about it? Why, man, we can tell our farmers that. We are now in the fall fertilizer season. If farmers in this state know what Illinois farmers are doing, they'll buy more fertilizer, too. That is, if we are alert enough to tell them about it."

"So what?" asked Milt, who sometimes liked to kid people, even though he knew the answers.

"So what?" roared Reitci. "The more fertilizer we sell, the bigger the sales volume, and the better the profit. Then our profit sharing with Joe is more for each of us."

"Oh," said Milt. "Money can be dull. Women are more interesting. If you got as excited about good looking gals, Mike, as you do about reading stuff in papers, then you'd really be living."

Mike acted as if he didn't hear. "Hey, guys!" he exclaimed, "Listen to this in a trade journal. Some dealer who's written up says that the principal reason his business is a success is because he's got good employees, loyal, alert and hard working."

There was a moment of silence. "Let me see that," said Smiley Johnson. "I have to see it before I believe it. You mean some feed man actually gave employees first credit? Wow—that's news."

Butterball nodded. "Yeah, it is. Usually a feed man says it's because he built a new mill, or because he installed new machinery."

"Or," said Ed Harrigan, a truck driver, "because of a new bulk truck, or a bunch of discounts or something like that."

"Yeah," said Butterball. "Employees don't get much credit. It hardly pays to be a man nowadays. He isn't even a cog in a machine. He isn't that good."

"Oh, come now," Reitci said. "Don't feel sorry for yourselves.

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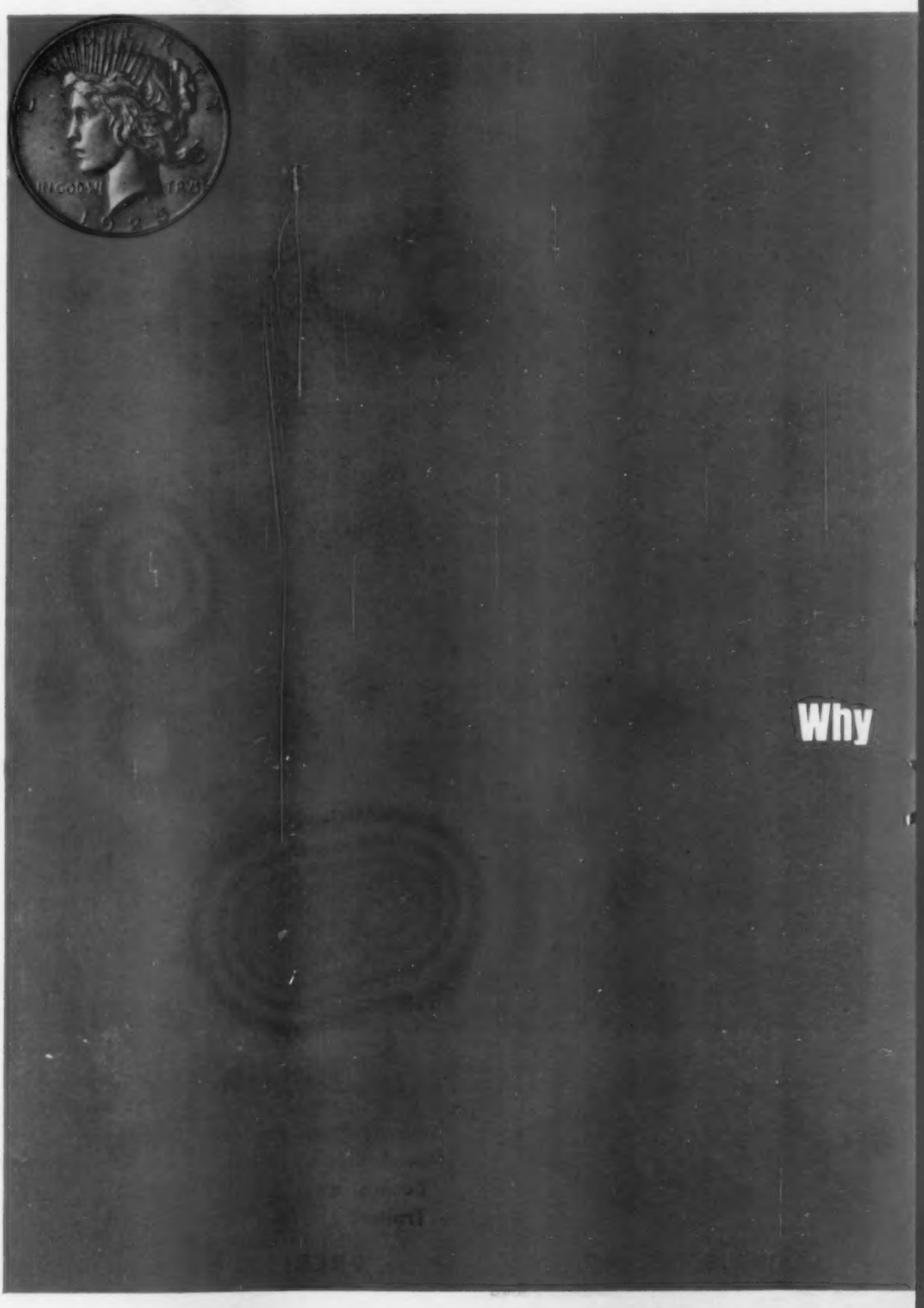

When a feed man buys a machine, it's his, every pound of it, to use or to scrap. But when a feed man hires an employee he's only paying him for the use of his body and brains for eight hours. But the dealer doesn't own him. The employee is his own boss for the rest of the day."

"Yes," said Butterball, as though enlightened now. "And the mill or the machine, or the bulk truck can't move around like we do. They have to stay where they are—all the time."

"What I don't like," Ed Harrigan said, "is that some employers keep loading jobs on you one after the other, always expecting you to do more and more. And they're short of praise."

"How about Joe?" asked Milt. "Doesn't he praise you?"

"Oh, once in a while. He could do it more."

Give Joe the Idea

Smiley Johnson chuckled. "Okay, let's circle the 'good men' reference in the feed article and lay it on Joe's desk. He'll see it and maybe the message will sink in. He's pretty hot in most departments. but, come to think of it, he always gives us credit third or fourth place for his success—never first. Maybe this will wake him up."

Milt Peters chuckled. "Yeah, Joe is fairly broad minded. Do you remember a few years ago when we wrote him a letter saying he shouldn't stay out so long to meetings at lunch time, that he should get to work when we do in the morning, etc.? He asked for our reactions, and so we summed them up in a letter."

"And he wasn't sore," Smiley said, "but he was a little hurt. You could tell that by the look in his eyes—even though he tried to hide it."

"But one thing you forget," Reitci said, "When an employer hires somebody to work for him, you can't expect the employer to be satisfied with below par performance. The employer has to make a profit on the employee's labor or his brains. Right?"

"Sure," said Milt. "But a man is a human being. He's got muscles, a brain but he also has feelings."

"And an ego," put in Smiley.

"What's that, a new antibiotic?" Butterball asked.

"I'll explain later," Milt said. "And because the employee is human, the smart employer will recognize him, say he appreciates him and his efforts, if he believes it. He will also commend him for a job well done."

Smiley grinned. "Too bad we're not having this discussion taped. Joe could play it over and over until he got the message."

"Okay," grinned Ed Harrigan. "This talk is getting kind of stuffy. Did you boys ever hear about the bachelor salesman who went to call on a widow who lived on a farm and was raising capons? Well, when he drove into the yard—"

CHAIN STORES INCREASE MOVEMENT OF CHICKEN

★

RICHMOND, VA.—A spot check of members of the National Association of Food Chains shows that six of the top 10 chains showed an increase of 27% in total chicken moved during the summer months, the National Broiler Council reported.

In order to help move the chicken, the chains cut their margins as much as 2.2¢ per pound at one time and 1.4¢ during a two-month period, NBC said.

Grants-in-Aid Support Cottonseed Studies

MEMPHIS, TENN. — Research studies designed to improve the quality of cottonseed oil meal are being supported by grants-in-aid from the National Cottonseed Products Assn., Inc., Louisiana State University; Oklahoma State University, and Texas A&M College.

The grants are used by research workers to increase the effectiveness of funds provided by their research institutions.

Louisiana studies are under direction of Dr. A. B. Watts, and relate to the adequacy of cottonseed protein amino acids for poultry.

Dr. C. M. Lyman is directing the Texas A&M work, relating specifically to determination of effect of processing on protein quality and development of analytical techniques to determine protein quality.

The Oklahoma State investigations are led by Dr. A. D. Tillman, and they concern the efficiency of cottonseed oil meal as a source of protein quality are considered of special opment and maintenance of high protein quality is considered of special importance because cottonseed oil meal is fed as a source of protein and because recent research indicates that quality of protein fed may be of greater significance than amount of protein in rations of many animals.

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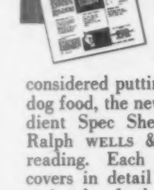
What you should know about DOG FOOD



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'Pet Food Sales Could Double by '70'

CHICAGO—The "explosion" of the dog population, which has been predicted to come within the next 10 years, could mean doubled sales and profits by 1970 for the pet food industry, according to Walter E. Armstrong, guest speaker at the Pet Food Institute's convention in Chicago's Drake Hotel.

Mr. Armstrong, Standard Brands, Inc., New York, told the group that "not only is dog food big business, but it's a fast growing business." He said that "over the past 10 years, dog food dollar volume in grocery stores has grown at a rate half again as fast as that of margarines and at a rate about equal to that of cold cereals."

Mr. Armstrong called on institute members to continue research on development of a nutritionally perfect product. "Foods should be more palatable to the dog and more convenient for the homemaker to prepare," he said.

Discussing the topic "How Is the Pet Food Market Changing?" Arden B. Crawford, Market Research Corporation of America, told the group that "if you can devise ways of increasing consumption of prepared dog food just 1 oz. per day, among city dogs, this would increase the total prepared dog food market by approximately 14%. If you can do the same for city cats, it would mean a total prepared cat food market increase of nearly 40%." He said that prepared dog food sales increased from 2.39 billion pounds in 1959 to 2.43 billion pounds in 1961.

Dog Numbers Increase

Mr. Crawford told his audience that the number of dogs in the country had increased from 23,800,000 in 1959 to 24,130,000 in 1961, but at the same time, the average number of dogs per family had dropped from 1.40 to 1.35. Cat numbers have dropped from 25,500,000 to 22,050,000; the average number of cats per family is 1.9, down from 2.1 in 1959. The speaker also noted that 17.9 million families own dogs and 11.3 million families own cats—29% of the owners have both cats and dogs. Forty-four percent of dogs and 57% of the cats are found on farms.

The audience was also informed that the annual pet census shows that the size of the dog is decreasing; that there is strong evidence that the consumer is becoming increasingly bargain-minded not only for price but also for value; and that dry dog food on a tonnage basis now represents approximately half of the total pounds purchased by consumers.

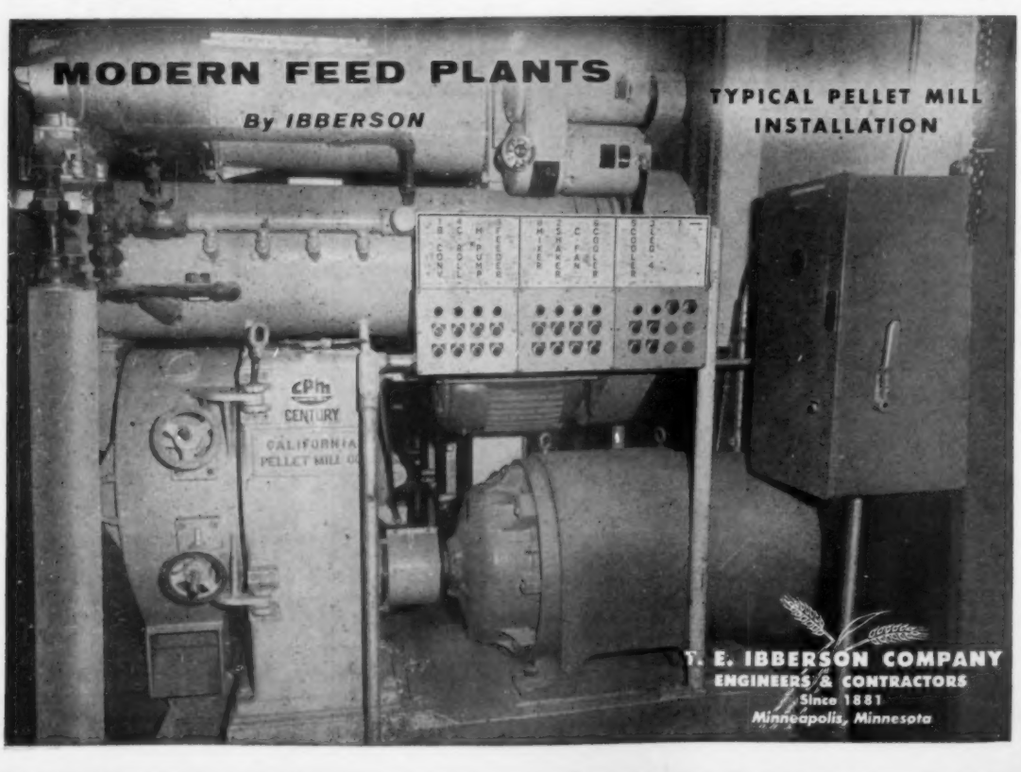
Another speaker was E. H. Rasmussen, buyer for more than 900 items for Red Owl Stores. In discussing the Red Owl space allocation, he said that the pet food area is a little over 1% of the total lineage for any given store.

Stresses Good Labeling

Referring to display and merchandising, Mr. Rasmussen said that "in your business there is a multitude of smaller packers all vying for volume. Labels are about the cheapest thing in a package, and if a good product has a bad labeling job, this one has trouble ahead. Money invested in good label design is well spent."

In closing his talk, Mr. Rasmussen said: "This industry of yours has shown a remarkable growth, but it can grow still more. It needs thinking, more research, more selling and more work with aggressive veterinarians."

Pet Food Institute members were told by another speaker that "in the



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next three years, about 75% of the nation's growth in sales volume is expected from new products and new brands." Making that statement was Edmund Ladendorff, Jr., Booz, Allen & Hamilton. Quoting studies conducted by his firm, Mr. Ladendorff said that "little more than 2% of all new product ideas become commercial successes. Even after thorough testing, about 50% of all new products are failures."

The speaker also said that a "new product program requires coordinated effort of the entire company with direction from top management. Our survey indicates that when a company selects and develops a product, it is choosing the kind of business it is going to be in."

Tablescraps Are Expensive

Making the statement "Tablescraps are the most expensive diet that can be fed to a dog" was Dr. Leon Whitney, noted veterinarian and animal nutrition expert. In his address to the Pet Food Institute convention, Dr. Whitney pointed out that "it is extremely unlikely that a householder can supply as sound a meal as can the nutritional scientists constantly working on pet nutrition."

The speaker also said that "the forecasted human population boom and its resulting decrease in land available for human food production will force drastic changes in already out-moded ideas that dogs and cats need human-type foods.

"It will behoove people to learn how to feed their dogs better without dependence on human-type food," he stated. Dr. Whitney urged institute members to support educational programs to inform pet owners of the nutritional and financial advantages gained by feeding their cats and dogs commercial foods.

Colorado State Will Conduct Research on Raising of Pullets

FT. COLLINS, COLO.—A large-scale research program on pullet raising will be started by the poultry section of Colorado State University agricultural experiment station.

The study will be concentrated on environmental factors of young pullets between six and 20 weeks of age, according to Dr. R. E. Moreng, chief of the section.

Work will be conducted under a grant from Gates-Cyclo, Inc., a new Denver firm which plans a large-scale egg production plant near Brighton. Gates-Cyclo, Inc., will turn over 18,000 baby chicks, plus facilities, labor and feed to CSU for the research. In addition, the firm made a cash grant to the experiment station to cover research expenses.

Gates-Cyclo is constructing a 100,000-bird cage layer plant, and the 18,000 chicks will be used to stock the first unit of the Brighton facility after the research is completed.

The study will probably involve such factors as feeding and floor space requirements, though exact plans are not final, according to Dr. Moreng.

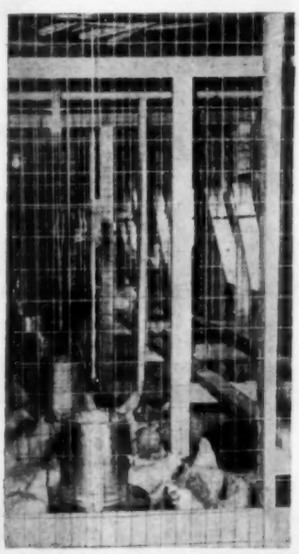
The young birds can be raised under different conditions and, when placed in individual cage units at Brighton, it will be possible to do follow-up studies on the production record of each bird.

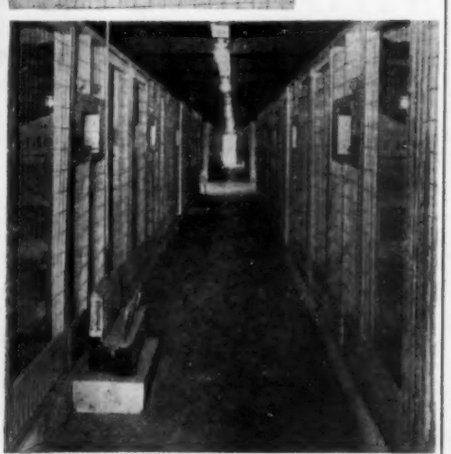
"With all birds under the same environment at Brighton, it will be possible to trace the influence of rearing practices upon egg production," Dr. Moreng explained. "In addition, the large flocks involved will give us a tremendous amount of research data.

"Rearing practices when pullets are six to 20 weeks of age have considerable influence on later production. But this is an area that previous research has ignored to large degree," Dr. Moreng commented.

Howard L. Enos, who recently joined the experiment station as assistant poultry husbandman, will conduct most of the actual work in the study. Mr. Enos previously was assistant poultryman with the CSU extension service at Ft. Collins.

384
PEDIGREE PENS!





No wonder today's Peterson Male is here in volume

And none too soon! Our repeat business is growing. Our new customers, many of the biggest and best-known men in the industry, are using our male in large numbers. Other important broiler men are watching closely. Our obligation to increase production has never been greater. Besides the new pedigree pens many new laying houses have gone up in Decatur; new hatchery capacity has been added. Our research program to improve our three basic lines has been expanded. Our progeny testing program has grown as fast as our sales.

But *all* of our breeding work is performed with our customary care; we continue to maintain *all* of our flocks under our own close supervision; every effort is made to see that the Peterson Males you buy will perform up to the standard that has made our bird so popular. Even so we can almost always give you the delivery you want. To be sure, send us your order right now. *Today.*

PETERSON breeding farm
DECATUR, ARKANSAS

Peterson MALE

Branches: Hampton, Conn.; Gainesville, Ga., and Thorntown, Ind. Foreign Distributors: Le Foeil, France; Barcelona, Spain; Brescia, Italy

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Complete accuracy in Molasses mixing bag after bag!
One mixer For All Your Mixing Needs.
Mixes Both Dry and Molasses Feed.
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Balanced HEALTH MANAGEMENT

brings out the best in today's poultry breeding and feeding . . .

Today's broilers, layers and turkeys have great bred-in capacity. And today's modern feeds provide high nutrition levels. These factors are very important . . . but they are not enough!

It takes a combination of breeding, feeding and health management for profitable production. If any of these steps are neglected—the others are handicapped.

For example, many broiler condemnations, turkey mortality or losses due to morbidity and laying flock depletion can be traced directly to improper health management.

We believe you and your customers can profit most by practicing Balanced Health Management. This means doing what is necessary to prevent disease. You can help them achieve this objective by including proper disease prevention and controls in your formulations.

Several Dr. Salsbury's Health Management products that contribute to profitable bird raising are discussed in the following pages.

Here's how Dr. Salsbury's proven Health Management Products can help your feeds perform better through improved flock health

BALANCED HEALTH MANAGEMENT brings out the

Growth Stimulation

3-NITRO®

Stimulates growth, improves feed efficiency

For 14 years, 3-Nitro has set a standard of performance in stimulating fast, efficient gains. Because of favorable grower experience, more than half the commercial broilers get 3-Nitro in their feed. Broilers gain faster, with better feed conversion. Laying flocks benefit, too. More hens live and lay.

Among swine, records indicate growing pigs average 16% heavier—*on 5% less feed*—with 3-Nitro in the ration . . . gives more uniform finish, with less disease problem.
These are benefits that help your feed perform even better.

best in today's poultry breeding and feeding

Coccidiosis Prevention

UNISTAT®

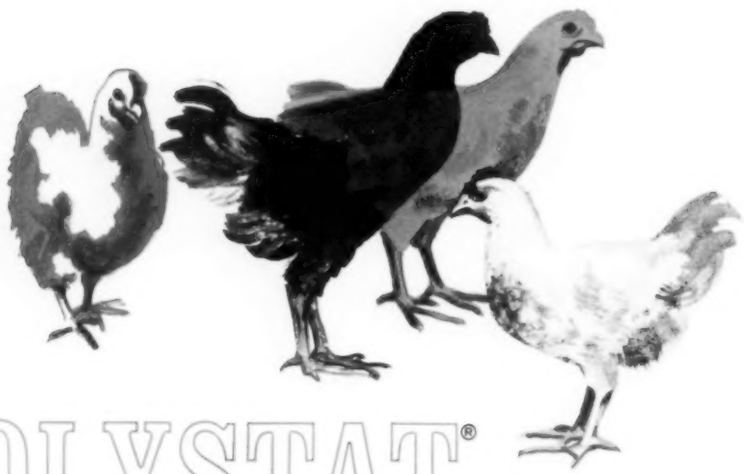
Stimulates growth, improves feed efficiency and prevents coccidiosis

Growth stimulation alone cannot prevent disease. Coccidiosis is a universal problem for your customers . . . mix Unistat in your feeds for chicks, pullets, and broilers. Unistat *prevents coccidiosis* under practical field conditions. Yet it allows immunity to develop in pullets . . . and it does even more. Birds given Unistat in their feed from the start show improved feed conversion, faster growth, better coloring. These extra benefits enable growers to put more pounds of the best broiler meat into the dressing plant—economically produced.

Encourage your customers to feed Unistat, the coccidiostat that also stimulates growth and improves feed efficiency. Unistat is a most important health management product for broilers and replacement birds.

BALANCED HEALTH MANAGEMENT brings out the

Coccidiosis and Worm Prevention



POLYSTAT®

for chickens and turkeys

. . . a coccidiostat that stimulates growth and feed efficiency, protects against large roundworms, tapeworms, turkey bluecomb and hexamitiasis

If you or your customers want a feed that protects growing chicks and turkeys against both worms and coccidiosis, in addition to stimulating fast, efficient gains, offer a growing mash formulated with Polystat. Polystat is a multi-purpose feed additive that provides more health management benefits than any other similar product. On Polystat, poults and broiler chicks start faster, stay ahead. They grow into sturdier, healthier birds, the kind that return highest profits because healthy birds get more good out of their feed.

best in today's poultry breeding and feeding

WORMAL is tops for tapes

Removes more species of tapeworms than any other wormer... also controls large roundworms and cecal worms

Wormal gives your feed a chance to do its best by removing nearly 100% of the major types of poultry worms. Only Wormal contains **dibutyltin dilaurate,** a drug that removes *3 times as many species of tapeworms as any other wormer.* Because worm-free birds are healthier, birds get more good out of their feed, feed efficiency goes up. This makes your feed look even better, just as it enables birds to grow or produce at their bred-in ability. So include Wormal in your worming mash formulations and help growers make more profit from their well-bred, well-fed birds.

STREPCILLIN F-25 *provides teamed antibiotics for better health and production*

Strepcillin F-25 gives your feeds added disease-fighting benefits—a product for times of stress! A product of antibiotics working together as a team, each supplementing the other. Can be mixed at different levels for proper health management in chickens, turkeys, swine.

BIOLOGICS... *to complete your health management program*

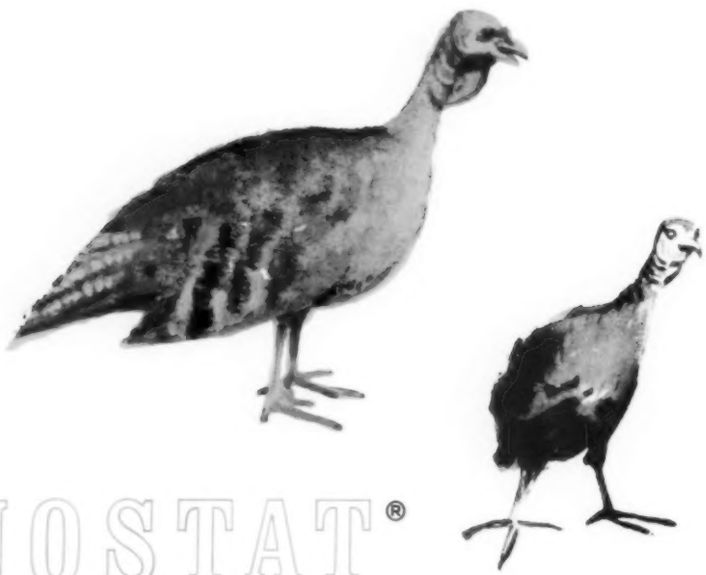
Dr. Salsbury's Laboratories pioneered in the development of low-cost, easy-to-use vaccines that take much of the disease risk out of poultry raising. These high quality vaccines have been used to protect billions of birds from the major virus diseases!

Recently, a new, instantly soluble vaccine was introduced—SoluVac. Already SoluVac has gained widespread popularity because of its superior efficacy.

Dr. Salsbury's Laboratories has developed complete vaccination programs that assure immunity by tailoring vaccine administration to individual flock needs. All this helps keep birds healthy. And healthy birds get more good out of their feed.

BALANCED HEALTH MANAGEMENT brings out the

Coccidiosis Prevention



TINOSTAT®

Protects turkeys against coccidiosis and hexamitiasis

More and more growers are starting poults on feed containing Dr. Salsbury's Tinostat. Tinostat contains 25% **dibutyltin dilaurate,** an exclusive Dr. Salsbury's compound. It *prevents mortality and loss of weight* because it has specific action against turkey coccidiosis and hexamitiasis. Tinostat is also economical to use, has no undesirable side effects, and is extremely palatable. With Tinostat in your starter rations, you are offering positive protection against two of the most troublesome turkey diseases—coccidiosis and hexamitiasis.

best in today's poultry breeding and feeding

Blackhead Prevention

HISTOSTAT®-50

Proven the best blackhead preventive

More and more turkeys are being grown and finished on feed containing Dr. Salsbury's Histostat-50. Histostat-50 consistently protects flocks against mortality and weight loss due to blackhead. It gives the type of disease prevention that assures strong, healthy birds—birds that get more good out of the feed because they're healthier.

For grower benefits that make new customers and keep the old, mix Dr. Salsbury's Histostat-50 in your turkey growing mash. It's the best blackhead preventive on the market today!

BACTERINS... *to complete your turkey health management program*

PASTEURELLA AVICIDA BACTERIN (emulsified)
For the prevention of fowl cholera

ERYSIPELAS BACTERIN
For erysipelas prevention

With these Dr. Salsbury's bacterins, healthy turkeys can be immunized against erysipelas and fowl cholera. Quality controlled to assure high level immunity in growing and breeding flocks. Economical to use—costs only pennies per bird treated.

BALANCED HEALTH MANAGEMENT brings out the best in today's poultry breeding and feeding

CALL A DR. SALSBURY'S HEALTH MANAGEMENT ADVISER

. . . Let him help you

There is a Dr. Salsbury's Health Management Adviser serving your area. Call on him . . . to help with any problems in Health Management. He welcomes the opportunity to serve you and your customers to get improved profit results.

Dr. Salsbury's Health Management Advisers can be helpful in many ways. They know the poultry and livestock business and the importance health plays in giving a profitable end result.

Your customers look to you for nutritional advice . . . and feed that gives better results.

Look to Dr. Salsbury's for proven Health Management Products to give you and your customers even greater benefits.

Phone or write today!

Dr. SALSBURY'S LABORATORIES
Charles City, Iowa, U.S.A.

MORE THAN PRODUCTS—A SYMBOL OF SERVICE

High Moisture Barley Fed Successfully

CROOKSTON, MINN. — High-moisture barley was harvested satisfactorily by direct combine, stored in a gas-tight structure and fed successfully to beef cattle in an experiment at Crookston during the past year, according to University of Minnesota researchers.

Results of the experiment were reported by E. C. Frederick and Diedrich Reimer at the University of Minnesota's Northwest experiment station here where the test was conducted. Mr. Frederick and Mr. Reimer are animal husbandmen at the Northwest station.

Rolled dry barley and rolled high-moisture barley, each with and without alfalfa hay, were fed to 40 medium grade yearling Hereford steers in lots of 10 each for 170 days. Steers receiving no alfalfa hay were fed one pound per head daily of a special barley supplement consisting of 60% dehydrated alfalfa meal, 30% dried beet pulp and 10% ground limestone.

The steers getting the rolled high-moisture barley plus the special barley supplement were slightly superior in average daily weight gains, feed efficiency and margin per steer over feed costs. The margin for this group was $35.69 as compared with $30.90 for those getting rolled dry barley with alfalfa hay; $27.91 for the steers getting rolled wet barley and alfalfa hay and $24.48 for the animals fed rolled dry barley with the barley supplement.

Steers fed rolled dry barley plus either alfalfa hay or special barley supplement had the highest marbling scores and USDA carcass grades. No other differences in carcass quality were found in comparing the four lots.

Stilbestrol implants increased daily weight gains an average of 12.3% with no significant effect on live market grade.

Rolled high-moisture barley proved to be a highly palatable feed, reported the researchers.

With barley, not corn, the major feed crop in the Red River Valley, the researchers wanted to find out whether this grain could be handled as a high-moisture crop and thereby aid in controlling wild oats, a serious problem in the area.

They found that much of the wild oats was still in the heads when the high-moisture plots were harvested. Approximately twice as many wild oats were found in the high-moisture as compared with the conventional (dry) barley. They also found that wild oats germination was completely eliminated after two months' storage at 30% moisture in the oxygen-free silo. Ninety per cent of the wild oats in the dry barley germinated in a greenhouse test.

A conventional 14 ft. self-propelled combine was used in the study. The cutter bar was used for the high-moisture barley, and the dry barley was picked up in the swath. Only slight changes were made in the combine setting for the wet barley.

The wet barley was harvested July 28 and 29 at 16.7-22.3% moisture and the dry barley Aug. 1 and 2 at 10.1-13.2% moisture. Enough water was added to the wet grain to bring the moisture level up to 30% in storage.

At approximately 70° outside temperature, the high moisture barley heated within two days after being removed from the silo. But when outside temperatures were below freezing, the wet barley did not heat for several weeks after removal.

The wet barley was most successfully handled and fed when it was removed daily from the silo and rolled into flakes to prevent whole kernels from passing through the cattle.

It was necessary to install a scraper on each roller of a conventional roller mill to prevent the wet grain from building up on the rollers.

Further studies on high-moisture barley are in progress at the Crookston station and will be reported after data have been evaluated.

Lincoln Convention Site

LINCOLN, NEB.—Lincoln will be site of the 1962 Nebraska Grain & Feed Dealers Assn. convention March 4-6, according to Sam McMaster, Jr., association president. The Cornhusker Hotel will be headquarters, and exhibits will be at Pershing Municipal Auditorium.

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PURE REEF OYSTER SHELL FLOUR-FREE TRACE MINERALS FROM THE SEA

IMPORTED BELGIAN TWINE - 9,000 FEET TO THE BALE - 325 LB TENSILE STRENGTH
Long staple East African fibers, strong and smooth, spun on Mackhaul-Gill spinners, make a twine that's strong and smooth. No breaking. No knotting. Plus, in every bale you get the economy of 9,000 feet of twine. And every foot is treated against mildew, rot, insects, and rodents. You can stock this imported twine with the same assurance you do Shellbuilder. And you can buy a mixed car of both at carload rates! There are more ways than one to profit with Shellbuilder Company. So start now: Add twine to your shell order and order now.
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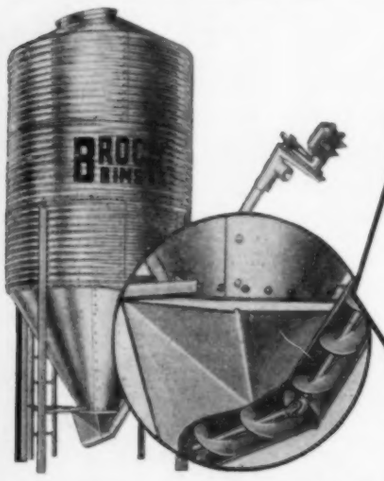


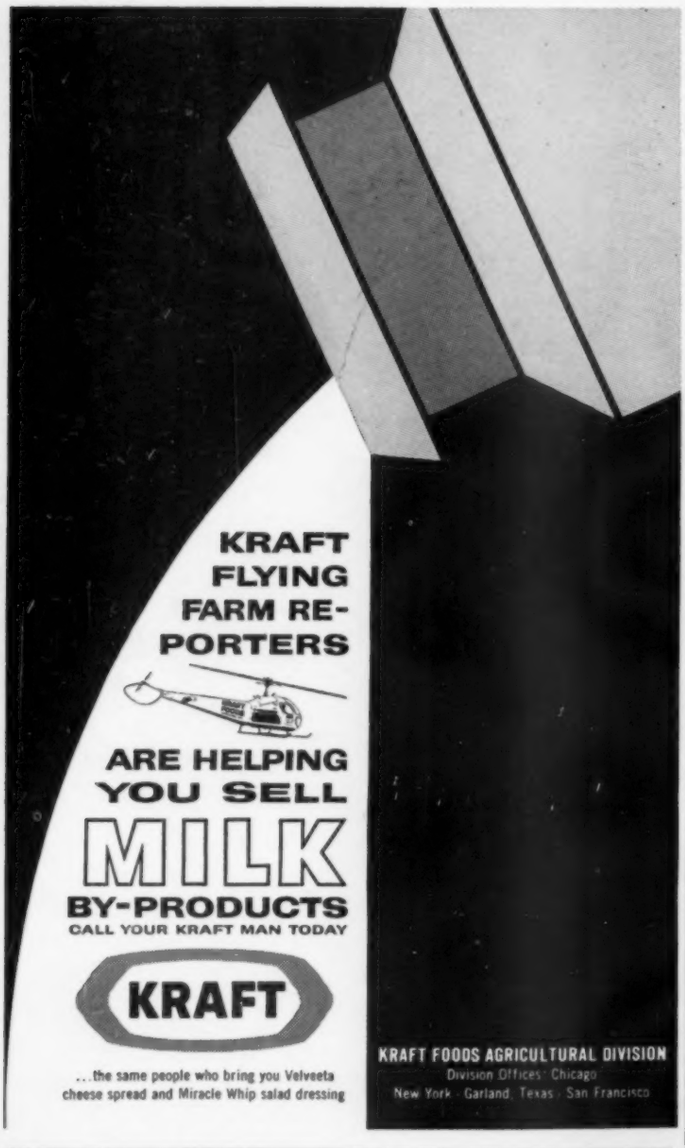
NEW "All-Out" Brock BULK FEED BIN Bottom

Ends Bridging and Clean-Out Problems!

The auger and the new Brock "All-Out" Bottom form a single unit with no reduction in bin capacity! Now, the large 4" auger enters the *entire* bin bottom. This greater penetration allows the auger to reach *all* the feed. Agitation is increased; and bridging, jamming and sticking are virtually eliminated.

Brock Bulk Feed Bins with the new "All-Out" Bottom are available in both side-draw (4- to 8½-ton sizes) and center-draw (3- to 7½-ton sizes) models in 6' and 9' diameters. Rugged weatherseal construction features heavy-guage galvanized steel; girder-like angle-iron legs with steel bracing, and caulked seams and bolts with Neoprene washers. Easy-to-reach, *slanting* 22" fill-hole permits filling the entire bin. There is no better bulk feed bin made! *Write for literature and prices today.*

BROCK MANUFACTURING, INC. • DEPT. F-7 • MILFORD, INDIANA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Convention Calendar

Oct. 23-25 — Centennial Nutrition Conference; Hotel Muehlebach, Kansas City 5, Mo.; sponsored by Midwest Feed Manufacturers Assn. and Land-Grant Colleges in Midwest's area; executive vice president, Lloyd S. Larson, 20 W. 9th St. Bldg., Kansas City 5, Mo.

Oct. 24-25—Virginia State Poultry Federation; Hotel John Marshall, Richmond, Va.; sec., J. Paul Williams, 615 E. Franklin St., Richmond 19.

Oct. 24-25—Indiana State Poultry Assn.; Hotel Severin, Indianapolis; sec., Robert L. Hogue, Poultry Science Bldg., Purdue University, Lafayette.

Oct. 26-28—Association of American Feed Control Officials; Shoreham Hotel, Washington, D.C.; sec., Bruce Poundstone, Head, Feed and Fertilizer Control Dept., University of Kentucky, Lexington.

Nov. 1 — Animal Nutrition Research Council; Shoreham Hotel, Washington, D.C.; sec., Dr. Philip Derse, Wisconsin Alumni Research Foundation, 506 Walnut St., Madison 5, Wis.

Nov. 1-2 — Kansas Poultry Assn.; Broadview Hotel, Wichita; sec., Harry J. Reed, Box 663, Manhattan.

Nov. 1-3 — Cornell Nutrition Conference; Statler Hilton Hotel, Buffalo, N.Y.; chm., Prof. Douglas E. Hogue, Animal Husbandry Dept., Wing Hall, Cornell University, Ithaca, N.Y.

Nov. 5-8 — National Renderers Assn., Inc.; Waldorf-Astoria Hotel, New York, N.Y.; asst. sec., Rose Alpert, 30 North La Salle St., Chicago 2, Ill.

Nov. 6-7 — Egg Industry Conference; North Carolina State College, Raleigh; Motte V. Griffith, Jr., College Extension Division, Box 5125, Raleigh.

Nov. 7-8 — Nebraska Poultry Improvement Assn.; National Guard Armory, 176 No. 10th St., Lincoln; sec., Doyle H. Free, Poultry Husbandry Bldg., University of Nebraska, Lincoln.

Nov. 8-9 — Illinois Feed Assn.-Illinois Poultry & Hatchery Federation joint convention; Springfield Armory, Springfield; sec., I.F.A. Dean M. Clark, 141 W. Jackson Blvd., Chicago 4; sec., I.P.H.F., Aubrey Harless, Shelbyville, Ill.

Nov. 9-10—National Swine Industry Conference; Statler-Hilton Hotel, St. Louis, Mo.; chm., Keith Myers, Grundy Center, Iowa.

Nov. 13-14 — Washington Animal Industry Conference; Skagit Valley College, Mount Vernon, Wash.; John G. Wilson, mgr., Washington State Feed Assn., Inc., 814 Second Ave. Bldg., Seattle 4.

Nov. 16-19—Florida Nutrition Conference; Grand Bahama Hotel, West End, Grand Bahama Island; chm., Dr. J. P. Feaster, Animal Husbandry and Nutrition Dept., University of Florida, Gainesville.

Nov. 17—Nebraska Feed and Nutrition Conference; University of Nebraska, Lincoln; Dr. P. L. Kelly, chm., Dairy Husbandry Dept.

Nov. 17-18—Tennessee Feed Manufacturers Assn.; Holiday Inn of America, 980 S. 3rd, Memphis, Tenn.; sec., C. H. Warfield, 200 American Trust Bldg., Nashville, Tenn.

Nov. 19-21—Western Grain & Feed Assn. of Iowa; Fort Des Moines Hotel, Des Moines, Iowa; sec., Bob Skinner, 401 Shops Bldg., Des Moines 9.

Nov. 30-Dec. 1—Dealers Nutrition Conference; University of Nebraska, Lincoln; Dr. P. L. Kelly, chm., Dairy Husbandry Dept.

Dec. 5-6 — North Dakota Turkey Convention; Civic Center Auditorium, Fargo; sec., North Dakota Turkey Federation, Irving J. Mork, Box 2408, State University Station, Fargo.

Dec. 6-7 — Missouri Poultry and American Poultry & Hatchery Federation Midwest Quickie Convention; Hotel Continental, Kansas City, Mo.; sec., Missouri Poultry Improvement Assn., E. M. Funk, Box 568, Columbia, Mo.

Dec. 7-8—Michigan Feed & Grain Dealers Assn.; Pantlind Hotel, Grand Rapids, Mich.; sec., Nevels Pearson, Box 472, East Lansing.

Dec. 7-8 — North Carolina Animal Nutrition Conference; North Carolina State College, Raleigh; chm., Dr. G. H. Wise, Animal Nutrition Section, Animal Industry Dept.

Dec. 13—American Society of Agricultural Engineers; Palmer House, Chicago; grain storage and feed proc-

New Listings

For the convenience of readers who scan the Convention Calendar regularly for new listings, those added to the column in the current week appear separately from ones which have been entered previously. The following week they will be moved to their proper slot where they will remain until the event is held.

1962

Nov. 8 — Upper Peninsula Feed Dealers Assn.; State Office Bldg., Escanaba, Mich.; UPFDA, Box 342, Sault Ste. Marie.

CALENDAR FOR 1961-62

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essing session, cooperative program sponsored by ASAE and Grain Processing Machinery Manufacturers Assn.; sec., GPMMA, John Wessman, 400 W. Dartmouth Rd., Kansas City 13, Mo.

1962

Jan. 8-9 — Kansas Formula Feed Conference; Kansas State University, Manhattan; chm., Prof. T. B. Avery, Poultry Science Dept., West Waters Hall.

Jan. 9-11—National Turkey Federation; Memorial Auditorium, Dallas, Texas; co-headquarters hotels, Baker and Adolphus; sec., M. C. Small, Box 69, Mount Morris, Ill.

Jan. 21-23—Indiana Grain & Feed Dealers Assn.; Claypool Hotel, Indianapolis; sec., Fred K. Sale, 600 Board of Trade Bldg., Indianapolis 4.

Jan. 21-24—Farmers Grain Dealers Association of North Dakota; Civic Memorial Auditorium, Fargo; sec., Lloyd C. Hanson, 513 Black Bldg., Fargo.

Jan. 23-27—New Jersey Farmers Week and Farm Show (Jan. 23-25); Trenton Armory; sec., Phillip Alampi, New Jersey Department of Agriculture, Trenton 25.

Jan. 28-30—Midwest Feed Manufacturers Assn.; Shamrock - Hilton Hotel, Houston, Texas; exec. vice pres., Lloyd Larson, 20 W. 9th St. Bldg., Kansas City, Mo.

Jan. 29-31 — Southeastern Poultry & Egg Assn.; Municipal Auditorium, Atlanta, Ga.; sec., Harold E. Ford, 235 E. Ponce de Leon Ave., Decatur, Ga.

Jan. 30-31—Illinois Agricultural Industries Forum; University of Illinois, Urbana, Ill.

Jan. 31-Feb. 1 — Illinois Nutrition Conference; University of Illinois, Urbana; chm., Dr. Carl L. Davis, Dairy Science Dept.

Jan. 31 - Feb. 1 — New Hampshire Poultry Health Conference; University of New Hampshire, Durham; Richard Warren, Poultry Science Dept.

Feb. 1—Missouri Turkey Day; University of Missouri, Columbia; sec., Missouri Poultry Improvement Assn.,

Feb. 2-3—Minnesota Turkey Growers Assn.; Leamington Hotel, Minneapolis; sec., Roy C. Munson, 2200 University Ave., St. Paul 14, Minn.
E. M. Funk, Box 568, Columbia.

Feb. 1-2—Oregon Animal Industry Conference; Oregon State University, Corvallis, Ore.; co-sponsored by the Oregon Feed & Seed Dealers Assn. and Oregon State University; chm., Bill Eggimann, Dairy Cooperative Assn., 2613 S.E. 8th Ave., Portland.

Feb. 4-6—Wyoming Grain, Feed & Seed Dealers Assn.; Townsend Hotel, Casper, Wyo.; sec., Everett L. Berry, Box 118, Sheridan, Wyo.

Feb. 5-7—Association of Southern Agricultural Workers; Jacksonville, Fla.

Feb. 7-9 — American Dehydrators Assn.; Stardust Hotel, Las Vegas, Nev.; Joseph Chrisman, 430 Board of Trade Bldg., Kansas City 5, Mo.

Feb. 9-11 — Poultry Fact Finding Conference; sponsored by Institute of American Poultry Industries; Municipal Auditorium, Kansas City, Mo.; pres., Harold M. Williams, 67 E. Madison, Chicago 2, Ill.

Feb. 12 - 13 — Montana Nutrition Conference; Montana State College, Bozeman; chm., Dr. O. O. Thomas, Animal Industry and Range Management Dept.

Feb. 14-15—Pacific Northwest Feed Mill Production School; Benjamin Franklin Hotel, Seattle; sponsored by Washington State Feed Assn.; mgr., John G. Wilson, 814 Second Ave. Bldg., Seattle 4.

Feb. 15-16 — Utah Feed Manufacturers & Dealers Assn. Annual Nutrition Conference and Meeting; The Newhouse Hotel, Salt Lake City; sec., Dr. Lawrence Morris, Brigham Young University, Provo.

Feb. 16 — Washington State Feed Assn. annual convention; Benjamin Franklin Hotel, Seattle; mgr., John G. Wilson, 814 Second Ave. Bldg., Seattle 4.

Feb. 18-20 — Ohio Grain & Feed Dealers Assn.; Commodore Perry Hotel, Toledo; sec., George G. Greenleaf, P.O. Box 151, Worthington.

Feb. 20 - 21 — Virginia State Feed Convention and Nutrition Conference; Hotel Roanoke, Roanoke, Va.; sec., Virginia State Feed Assn., J. Paul Williams, 615 E. Franklin St., Richmond 19, or Prof. Paul M. Reaves, Dairy Science Dept., Virginia Polytechnic Institute, Blacksburg.

Feb. 26 - March 1 — Colorado Livestock Days; Colorado State University, Fort Collins; chm., Dr. C. D. Story, head, Animal Science Dept.

March 2-3—Oklahoma Feed Industry Conference and Work Shop; Oklahoma State University, Stillwater; Dr. Rollin H. Thayer, chm., Poultry Science Dept.

March 4-6—Nebraska Grain & Feed Dealers Assn.; The Cornhusker Hotel, Lincoln; sec., Howard W. Elm, Terminal Bldg., Lincoln 8, Neb.

March 8 - 9 — Maryland Nutrition Conference; Shoreham Hotel, Washington, D.C.; chm., Dr. R. D. Creek, Poultry Dept., University of Maryland, College Park.

March 13—Illinois Swine Growers Day; Univerity of Illinois, Urbana, Ill.

March 15-16—Oregon Feed & Seed Dealers Assn.; Sheraton Hotel, Portland; sec., Russ Hays, Lewis Bldg., Portland 4.

March 15-17 — Pacific Dairy and Poultry Assn.; Biltmore Hotel, Los Angeles, Cal.; sec., Lloyd J. Powers, 1304 E. 7th St., Los Angeles 21.

March 19-21—Poultry and Egg National Board; Palmer House, Chicago, Ill.; mgr., Lloyd H. Geil, 8 S. Michigan Ave., Chicago 3.

March 21-23—Grain & Feed Dealers National Assn.; Denver - Hilton Hotel, Denver, Colo.; Secretaries Circle meetings March 19-20; sec., Herbert L. Sharp, 401 Folger Bldg., 725 15th St. N.W., Washington, D.C.

March 25 - 30 — Grain Elevator & Processing Superintendents; Town House Motel, Omaha, Neb.; sec., Dean M. Clark, 1115 Board of Trade Bldg., Chicago 4, Ill.

March 28—Distillers Feed Conference; Sheraton Gibson Hotel, Cincinnati, Ohio; Dr. Lawrence E. Carpenter, Executive Director, Distillers Feed Research Council, 1232 Enquirer Bldg., Cincinnati 2.

March 28—Commercial Egg Clinic; Texas A&M College, College Station; B. C. Wormeli, Extension Poultry Husbandman.

April 9-10 — National Institute of Animal Agriculture; Purdue University, Lafayette, Ind.; sec., Karl D. Butler, P.O. Box 521, First National Bank Bldg., Ithaca, N.Y.

April 10-12—Animal Health Institute; Statler-Hilton Hotel, Washington, D.C.; sec., D. L. Bruner, 512 Shops Bldg., Des Moines 9, Iowa.

April 13 — Illinois Cattle Feeders Day; University of Illinois, Urbana.

April 18—Nebraska Feeders Day; University of Nebraska, Lincoln; chm., Dr. Robert M. Koch, Animal Husbandry Dept.

April 26-28 — Texas Grain & Feed Assn.; Hotel Texas, Ft. Worth; sec., R. B. Bowden, 504 Ft. Worth Club Bldg., Ft. Worth 2.

April 26-28—California Hay, Grain & Feed Dealers Assn.; Biltmore Hotel, Los Angeles, Cal.; sec., Leo L. Johnson, 1400 10th St., Sacramento 14, Cal.

April 26-28—Kansas Grain & Feed Dealers Assn.; Broadview Hotel, Wichita, Kansas; sec., Orris E. Case, 609 Wiley Bldg., Hutchinson, Kansas.

April 27 — Indiana Cattle Feeders Day; Purdue University, Lafayette; chm., Dr. W. M. Beeson, Animal Science Dept.

May 4 - 5 — Illinois Grain Dealers Assn.; St. Nicholas Hotel, Springfield, Ill.; exec. sec., Donald E. Palmer, 910 Lehmann Bldg., Peoria, Ill.

May 10-11 — Alabama Poultry Industry Assn. Convention and Poultry Jubilee; Dinkler - Tutwiler Hotel, Birmingham, Ala.; sec., W. L. Walsh, Box 567, Montgomery.

May 10-12—American Feed Manufacturers Assn.; Conrad Hilton Hotel,

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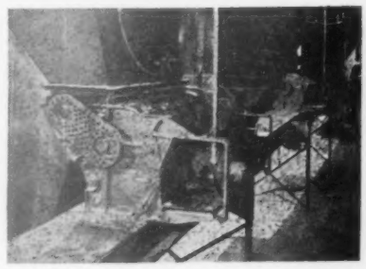

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Prepared and Copyrighted by
Charles H. Hubbell, Feed Consultant, Chicago

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SALT, EGG PROMOTION—The International Salt Co., Clarks Summit, Pa., has announced that it is supporting the poultry industry in its current advertising campaign. A cheese omelet takes the spotlight on the company's new outdoor poster advertising Sterling Salt. The billboards will run from September through December in International's sales territories. For added power, "Eggs, the Perfect Center of a Meal," will be featured on the Sterling Salt Spectacular.

Chicago, Ill.; sec., W. T. Diamond, 53 W. Jackson Blvd., Chicago 54.

May 27-28—Missouri Grain & Feed Assn.; Hotel Governor, Jefferson City, Mo.; sec., D. A. Meinershagen, Higginsville, Mo.

June 28-30—Canadian Feed Manufacturers National Assn.; Sheraton Brock Hotel, Niagara Falls, Ontario, Canada; sec., Ontario Division, H. J. Willcock, 356 Eastern Ave., Toronto 8, Ontario.

July 17-19—American Poultry Congress & Exposition; St. Louis, Mo.; sec., American Poultry & Hatchery Federation, Don M. Turnbull, 521 E. 63rd St., Kansas City 10, Mo.

Aug. 13-18 — 12th World's Poultry Congress; Show Grounds of the New South Wales Royal Agricultural Socity, Sydney, Australia; Dr. Cliff D. Carpenter, chairman, U.S. Participation Committee, 1207 Emerald Bay, Laguna Beach, Cal.; Dr. A. William Jasper, secretary, c/o AFBF, 2300 Merchandise Mart, Chicago 54, Ill.

Aug. 24—Purdue Swine Day; Purdue University, Lafayette, Ind.; chm., R. A. Pickett, Animal Science Dept.

1963

March 24-29 — Grain Elevator & Processing Superintendents; Commodore Perry Hotel, Toledo, Ohio; sec., Dean M. Clark, 1115 Board of Trade Bldg., Chicago 4, Ill.

Day and Hart-Carter Merger Is Announced

MINNEAPOLIS — The Day Co., Minneapolis, and Hart-Carter Co., Peoria, Ill., have merged, according to A. B. Osgood and P. E. Henseler, presidents of the respective companies. The merger was effective October 6.

The Day Company will function as a division of Hart-Carter Co., and Day's present subsidiaries, The Day Sales Co., The Day Company of Canada, Ltd. and Daycom, Inc., will retain their present names and will operate as subsidiaries of Hart-Carter Co. No major changes in operating policy or personnel of either company or subsidiaries are contemplated.

Purpose of the merger, according to the presidents, is to provide Hart-Carter Co. with a more diversified line of products and The Day Co. with additional working capital for continued growth. The two companies will also gain by sharing their experiences in matters of management, research and development and engineering.

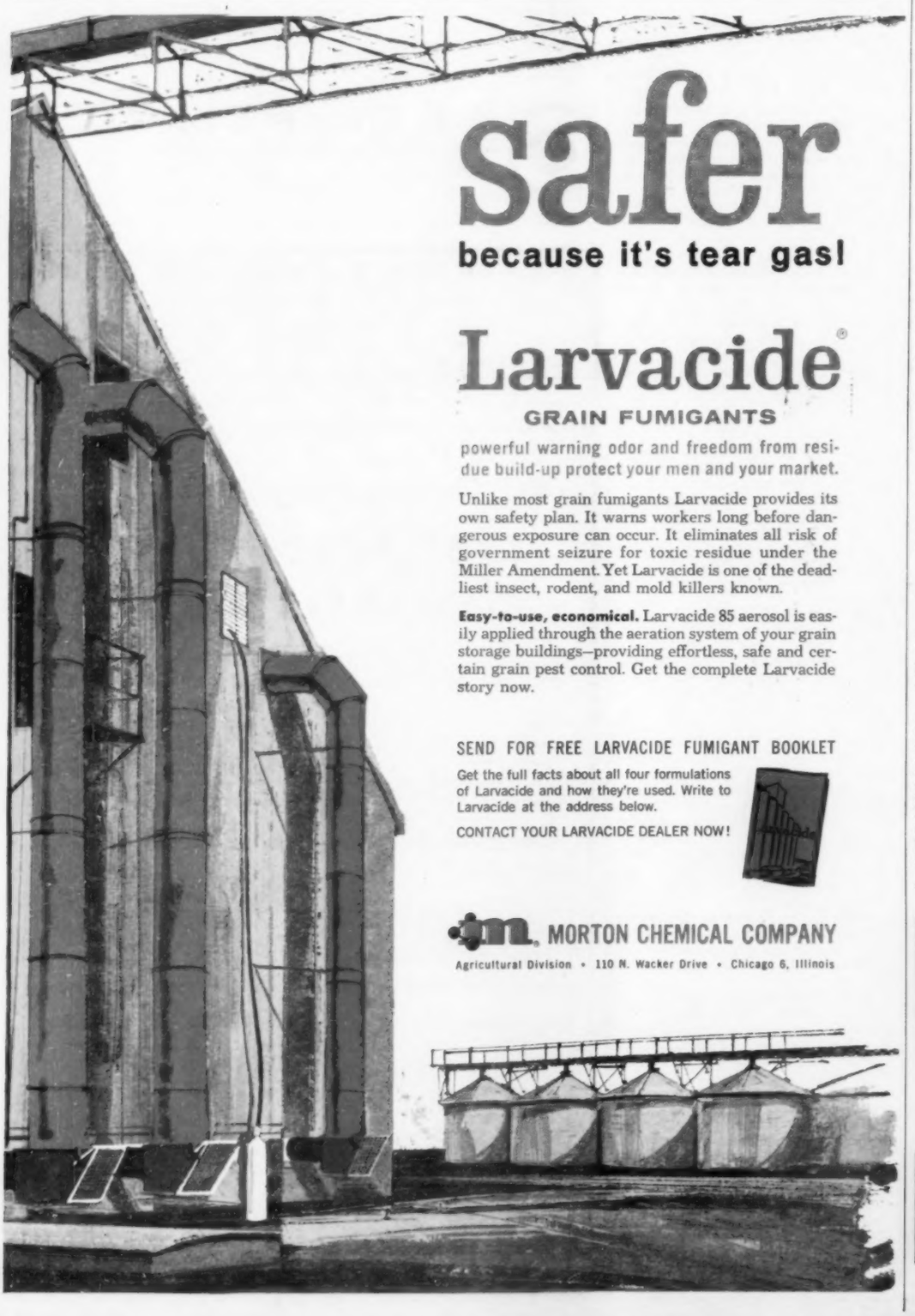
Hart-Carter Co. manufactures farm machinery components and has been active in the farm implement field for 72 years. Main offices are in Peoria. Plants are located in Peoria and Gridley, Ill., and in Webster City, Iowa. The company also has 50% interest in the Simon-Carter Co. of Minneapolis.

The Day Co., founded in Minneapolis in 1881, is described as one of the leading manufacturers of dust control, pneumatic conveying and bulk storage equipment, as well as grain dryers for terminal and subterminal grain elevators. Main office is in Minneapolis with plants in Minneapolis, Ft. Worth, Texas, and Toronto and Ft. William, Ontario, Canada.

Blending Mill Firm

WATERLOO, IOWA—A new blending mill will be introduced to midwestern farmers through a sales campaign conducted by Geerlings' Feed Mills here.

Waterloo Industries, Inc., a new corporation, has been organized to handle the engineering and installation of the "Waterloo" mill on individual farms, according to P. J. Geerlings, president. The mill is being manufactured by Mahaska Industries, Inc., Oskaloosa, Iowa. Mr. Geerlings said that 50 of the machines have been produced and an order placed for 50 more.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Your merchandising program has been a tremendous help in our upswing in sales. It tells an extremely effective story to our feeders and proves without doubt that feeders can make more with a high quality feed especially when they pay less for it. The result of our sales [illegible] to expand our facilities and do some needed remodeling so as to better serve our customers. Yes, we are quite happy with the Swisher program and would strongly recommend it.

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Eli Leman, Manager

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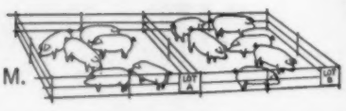
Putting Research To Work

BY SPENCER H. MORRISON, PH.D., D. V. M.



Studies of Dry Rations for the Growth and Furring of Mink, and Dry Diets for Mink During Maintenance, Reproduction and Early Kit Growth

● H. F. Travis and P. J. Schaible, Michigan State University Quarterly Bulletin, Vol. 44, No. 1, pp. 32-51, August, 1961.

From the results of these two papers we may conclude that the search for commercial dry diets for mink use is much closer to realization. Although it is true that some fresh meat products still have to be fed for optimum results, the proportion of these products used with good results in the Michigan work is far less than that commonly use on commercial ranches today.

The first paper investigated dry rations for the growth and furring of mink. The objective was to determine if the dry rations in the meal or pellet form and with or without fresh liver, could satisfactorily replace the usual ranch-type mink food consisting of fresh or frozen meat products. In the first experiment reported in this paper, mink kits were fed either a dry ration or a typical ranch ration. Various types of dry diets were fed, and experimental variables included animal fat, cottonseed oil, torula vs. brewer's yeast, and extra fish meal and soybean meal.

The composition of the ranch ration used as a control was as follows: Horse meat, 26.7%; tripe, 26.6%; ocean fish, 26.7%; liver, 5.0%, and Kellogg mink cereal 1001, 15.0%. During the period from 11 to 16 weeks of age, the kits on the control diet outperformed all those on any of the dry diets. On the other hand, during the period of kit growth from 16 to 30 weeks the dry diets all performed satisfactorily. During the 11 to 16 weeks period, those dry diets with animal grease performed significantly better than those containing cottonseed oil.

Analysis of gain in length of the kits showed no significant differences between diets. Fur quality was unaffected by diet.

In the second experiment reported in the first paper, the fat level of the dry diets was increased substantially higher than those generally found in commercial ranch rations (approximately 22 to 23% and 31% fat on a moisture-free basis versus a fat level for normal ranch rations of approximately 20% on the same basis). Also, the dry diets were fed with and without fresh liver. When liver was added to dry diets, it was used at the 25% level of the total diet.

The results showed that males gained much more proportionally than females, and that the gains for both males and females during the entire period of the experiment were significantly greater for the mink fed the ranch ration than any of those fed dry rations. The addition of the fresh liver significantly benefited the dry diets. The females on the dry diets plus liver gained porportionately better than the males and those females fed the high-fat diet with fresh liver practically equalled in weight those fed the control diet.

The analysis of data also showed that again during the 11 to 16 weeks period the control diet was best, with dry diets with liver next and dry diets alone poorest. But, during the 16 to 30 weeks period, the dry diets with liver were best, the dry diets without liver were next best, and the control diet poorest.

Thus, it is obvious from the first paper that dry diets can be fed successfully for kits from 16 to 30 weeks of age. The best of these diets would be one supplemented with 25% liver, but if this product is at a premium or if it is not readily available it is probable that results fully equal to present day ranch practices can be obtained during this period with a completely "dry" type diet. One of the better performing of these diets for this period had the following composition:

Kellogg 1007 mink mix	14.7%
Dried torula yeast	5.0%
Dried brewers yeast	5.0%
Dehulled soybean meal	15.0%
55% fish meal	30.0%
Liver product (Imperial Products, Wadsworth, Ill.)	3.0%
Dried skim milk	4.0%
Animal grease	15.0%
Sucrose	4.0%
Vitamin supplement*	0.3%

*Contains per 100 lb.: 10,000 U.S.P. units/gm. vitamin A, 12 gm.; 3,000 I.U./gm. vitaman D, 6 gm.; 20,000 I.U./gm. vitamin E, 6 gm.; 8.6 gm./lb. vitamin K menadione, 22 gm.; and 25% choline chloride, 110 gm.

Brewer's yeast could be substituted for torula yeast or vice versa, if desired, with probably equally good results. It would be interesting to have further research on this subject concerning the effects of an abrupt transfer from a normal ranch ration at the end of the 16 weeks period to a good dry type diet similar to the one above, with and without the supplemental use of liver meal or other ani-

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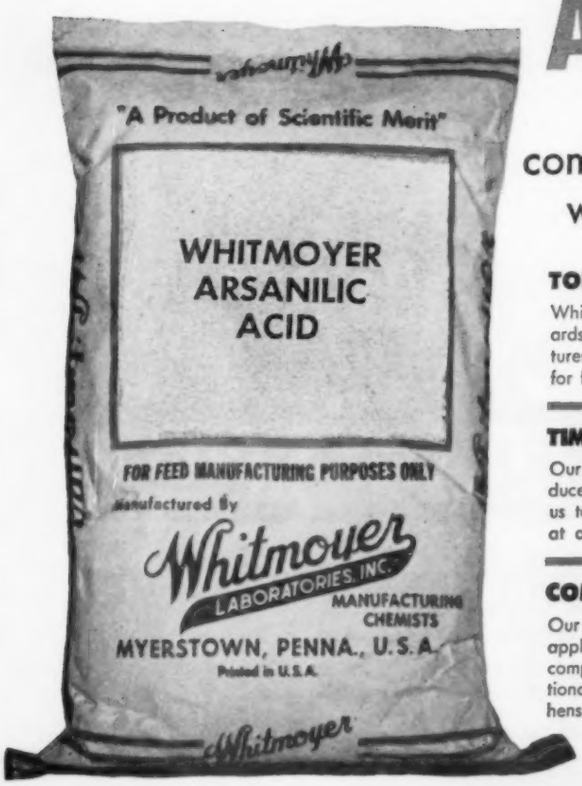

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4 A complete line of scientifically formulated premixes and boosters for all kinds of livestock. Myzon premixes plus laboratory services let you customize every feed order.

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ESTABLISH U.S. TRADE CENTER IN LONDON—U.S. food products which have their origin in feed grains, such as poultry meat, are being given a new boost in the British market with the establishment in London of a permanent U.S. Trade Center. At a reception to introduce United Kingdom representatives of the U.S. Feed Grains Council, Norman Comben (left), U.K. representative, and Charles Gidney, European representative of the council, join Robert Anderson, agricultural attache, meeting guests of the U.S. Trade Center in London. The U.S. Trade Center is a joint venture of the U.S. Departments of Commerce and Agriculture. The export campaign was initiated at an exhibit of American processed foods at the trade center. A total of 116 U.S. food and agricultural firms and associations participated.

mal products. Since the later period of growth is the time of greatest food consumption, the potential savings in the growing of kits are very large.

The second paper concerns the methods and results of two experiments conducted during the maintenance and reproduction periods of adult female dark and pastel mink using dry rations supplemented at intervals with fresh animal products. In the first of these experiments, mink fed a dry diet prior to breeding with 25% of fresh liver added during gestation and lactation were comparable in adult weight, breeding performance and number of kits whelped to those mink that received a typical commercial ranch diet. There was no significant difference in one-day kit weights, but the 21-day kit weights were significantly greater for the mink fed the control ration, indicating that lactation performance on the experimental diets was not satisfactory.

The results obtained in the second experiment discussed in this paper are not as good as those from the first experiment. In this trial the mink were fed a dry ration prior to breeding and during gestation until just before whelping. Then, the dry diet was supplemented with 25% of either fresh liver or tripe. The females on the control rations averaged 5.9 kits per female, while those on the dry rations averaged 4.0 kits per female kept. The kits that survived, grew satisfactorily on both types of rations.

It is also interesting to note that the response for the addition of fresh liver or fresh tripe to the dry diets during lactation was similar and indicates that the widely heralded advantage of fresh liver with ranch and dry diets during this period is probably chiefly one of improvement in palatability of rations rather than fresh liver's supplying critical nutrients.

Stilbestrol Test with Dairy Heifers Reported

NORTH PLATTE, NEB. — There were no significant differences in average daily gain or in milk production between a group of heifers which received stilbestrol and a control group in an experiment conducted at the North Platte experiment station, University of Nebraska.

Myron Rumery, station researcher, reports average daily gains for part of the growing, breeding and gestation period were .9 lb. per head each day for the control group and .96 lb. for the stilbestrol-fed group. Daily milk production for heifers in the stilbestrol group averaged approximately 2 lb. less than those in the control group.

Objective of the investigation was to determine the influence of stilbestrol with a high roughage ration in raising dairy heifers. Twenty-six Holstein heifers, averaging 686 lb., were divided into two groups, by pairs according to weight. The control group received a basic daily ration of 20 lb. of alfalfa hay plus 1 lb. of pellets, made from a mixture of equal parts of corn and oats. Heifers in the other group received the same ration plus enough stilbestrol premix included in the pellet mixture to provide 10 mg. per head daily. All heifers were grazed on irrigated and native pastures during the growing season, Mr. Rumery said.

BUYS LOADING FACILITIES

DES MOINES—The Farmers Grain Dealers Association of Iowa, Des Moines, has completed negotiations for purchase of barge loading facilities known as Meekers Landing on the Mississippi River in Des Moines County, according to Don E. Edison, association executive secretary. The loading facilities were bought from the Des Moines County Farm Bureau Service Co., Danville.

Granary Weevils—and other uninvited grain eaters die fast when Diamond's patented Brand "A" puts the finger on them.

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Taomyxin has proved it can produce more gains at less cost than any other antibiotic used alone, or any combination of antibiotics tested. Test averages show 8 days less feeding time and $34.20 less cost per 100 hogs.

Testing by Pfizer, the feed industry, colleges, and on many hog farms has shown the recommended level of Taomyxin to be 2 grams of oleandomycin to 8 grams of oxytetracycline wherever increased performance is of prime importance.

During periods of high disease risk, the product of choice is still Terramycin** alone at high levels—it's the proven superior disease-fighting antibiotic.

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*Oleandomycin and oxytetracycline
**Brand of oxytetracycline—Reg. U. S. Pat. Off.

The following summary shows the average of test results comparing Taomyxin with antibiotics used alone or in combination:

	Control†	Taomyxin
GROWTH		
Number of trials	12	12
Number of pigs	694	669
Av. daily gain—lbs.	1.38	1.48
Increase over controls—%	—	7.25%
FEED EFFICIENCY		
Number of trials	12	12
Number of pigs	694	669
Lb. feed/lb. gain	3.70	3.62
Improvement—%	—	2.20%
ECONOMICS††		
Cost per cwt. gain	$11.951	$11.761
Savings per cwt. gain	—	.190
Savings per pig (180 lbs. gain)	—	.342
Savings per 100 pigs	—	$34.20

†Other antibiotics and combinations of antibiotics.
††Cost of antibiotic supplements included.

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DESCRIPTIONS OF NEW AND IMPROVED PRODUCTS AND SERVICES PROVIDED BY MANUFACTURERS AND SUPPLIERS ARE PRESENTED IN BRIEF FORM. FOR ADDITIONAL INFORMATION, PLEASE USE THE ACCOMPANYING COUPON.

No. 7721—Mobile Mill Operation

SECO, Inc., announces availability of literature on methods of establishing mobile feed mill routes. The information reportedly gives the new mobile operator with a feed account a "proven system for making profits." Routes are designed to increase concentrate and supplement sales, along with gaining new customers, according to the literature. The SECO firm manufactures a mobile mill.

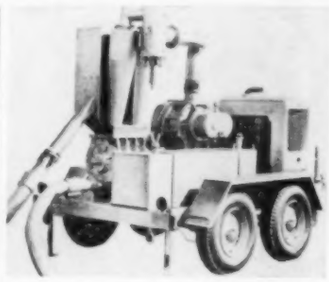
For a copy of this literature, check No. 7721 on the coupon and mail.

No. 7720—Portable Pneumatic Conveyor

Two new portable pneumatic conveyors have been announced by the Buhler Corp.

They are said to be especially suited to low cost bulk transfer of grain and seed to and from cars, trucks, barges, ships and warehouses.

The Trojan series consists of compact units rated at 10 to 25 tons an hour. The manufacturer says these new conveyors employ a positive displacement blower rather than the conventional multi-stage fans. This is said to allow them to "deliver more tons per hour while using less power, and permits use of less expensive small-diameter conveying lines." The machine also has an automatic shut-off device which stops the entire plant when foreign material obstructs



the air lock or other abnormal conditions occur.

Buhler conveyors are mounted on their own chassis, which is equipped with four pneumatic-tired wheels, and can be towed at normal speeds without "whip," according to the manufacturer. They can also be furnished without chassis.

A standard industrial gasoline engine is standard equipment, but diesel engines or electric motors can also be supplied.

For additional information, check No. 7720 on the coupon and mail.

No. 7723—Bin Drying

"Drying Grain in Storage Bins With Dry-O-Mation" is the title of a new brochure now available from Farm Fans, Inc. The booklet includes a description of equipment manufactured by the company, information on farm bin drying, how to survey drying problems and select necessary equipment to dry different grains at different moisture levels, and hypothetical examples of how grain should be dried under different conditions.

Also included in the booklet are tables designed to help determine rates of drying.

For additional information, including a copy of the brochure, check No. 7723 on the coupon and mail.

No. 7719—Self-Service Rodent Killer

A bait station that is said to become a self-service killer of rats and mice is being marketed by Vineland Laboratories.

Containing the firm's new rodenticide—Robane—the station has a pull-out drawer that is self-filling as rodents nibble away at the contents.

Instructions tell users to open the package of Robane by pulling out the

sliding drawer. If the rodent menace subsides, the Robane station can be closed for storage with its drawer shut, and can be placed back in action with the re-opening of the sliding panel.

According to the manufacturer, the contents are "a special formula flavorful killer" that rodents crave. Consumption over a 5- to 14-day period is fatal to both rats and mice, it is claimed.

For additional information, check No. 7719 on the coupon and mail.

No. 7722—Brochure On Services

General American Transportation Corp. has available a new brochure telling of its various services.

The brochure tells what General American Transportation offers in the way of planning services and processing equipment and storage and transportation equipment, including special railroad cars.

For a copy of this literature, check No. 7722 on the coupon and mail.

Also Available

The following new products have been described in previous issues of Feedstuffs and information about them may still be obtained by jottmg the appropriate number of the coupon and forwarding it to Feedstuffs.

No. 7666—Small animal warmer, Rhinehart Manufacturing Co., Inc.

No. 7667—Feed, grain conveyor, LML Engineering & Manufacturing Corp.

No. 7668—Liquid protein supplement, The Wisconsin Liquid Feed Corp.

No. 7669—Bucket conveyor, Clermont Machine Co., Inc.

No. 7670—Reference table for bag material, St. Regis Paper Co.

No. 7671—Mastitis treatment, Hess & Clark.

No. 7672—Package milling unit, Jacobson Machine Works, Inc.

No. 7673—Hopper car vibrator, Martin Engineering Co.

No. 7674—Bulk feed transport body, Baughman Manufacturing Co.

No. 7675—Duo-directional auger, Wyatt Manufacturing Co., Inc.

No. 7676—Weather effect on business, St. Regis Paper Co.

No. 7677—Scoop auger, Sudenga Industries, Inc.

No. 7678—Controlled feeding of liquids, solids, B-I-F Industries.

No. 7679—Control panel indicating light, Semco Electric Controls, Inc.

No. 7680—Front end loaders, The Frank G. Hough Co.

No. 7681—Antibiotic for CRD, Elanco Products Co.

No. 7682—Poultry performance calculator, Cobb's Pedigreed Chicks, Inc.

No. 7683—Rat extermination, Hess & Clark.

No. 7684—Feed flavoring handbook, Flavor Corp. of America.

No. 7685—Tramp Iron Drum Separator, Eriez Manufacturing Co.

No. 7686—Bulk truck, Winger Manufacturing Co.

No. 7687—Calf raising handbook, Wirthmore Feeds, Inc.

No. 7688—Base for calf milk replacers, Borden Special Products Co.

No. 7689—Antibiotic for swine, Elanco Products Co., Div. of Eli Lilly & Co.

No. 7690—Horizontal batch feed mixer, Sprout, Waldron & Co., Inc.

No. 7691—Pfizer activity review booklet, Chas. Pfizer & Co., Inc.

No. 7692—Fluid pump, Clayton Manufacturing Co.

No. 7693—Lightweight bin vibrator, Martin Engineering Co.

No. 7694—Equipment leasing plan, Nationwide Leasing Co.

No. 7695—Promotion for mastitis medication, The American Cyanamid Co.

No. 7696—Dried beet pulp, The I. S. Joseph Co., Inc.

No. 7697—Equipment brochure, Edw. Renneburg & Sons Co.

No. 7698—Pneumatic conveying system, Sprout, Waldron & Co., Inc.

No. 7699—Fortification of feedlot rations, Vit-A-Way, Inc.

No. 7700—Suspended separation magnets, Indiana General Corp., Stearns Division.

No. 7701—Conveying, tubing elbows, Systems Engineering & Manufacturing Co.

No. 7702—Temperature measuring system, Radson Engineering Corp.

No. 7703—LP-Gas stock tank heater, Brower Manufacturing Co.

No. 7704—Pressurized bulk feed truck, Sprout, Waldron & Co., Inc.

No. 7705—Belt selection guide, The Imperial Belting Co.

No. 7706—Fiberglas storage tanks, Tryco Manufacturing Co., Inc.

No. 7707—Continuous weighing system, Industrial Powertronix, Inc.

No. 7708—Automatic control panel, Thayer Scale Corp.

No. 7709—Sow milk tablets, Agri-Tech, Inc.

No. 7710—Bulk scale, Burrows Equipment Co.

No. 7711—Portable loader, Ft. Worth Steel & Machinery Co.

No. 7712—Livestock tablets, Myzon Laboratories.

No. 7713—Poultry house heater, Electronics, Inc.

No. 7714—Antibiotic treatment for livestock, Abbott Laboratories.

No. 7715—Grain drier literature, Aeroglide Corp.

No. 7716—Steam generator, Clayton Manufacturing Co.

No. 7717—Steel building booklet, The Columbian Steel Tank Co.

No. 7718—Bulk feed bin, Chore-Boy Manufacturing Co.

Grain Moisture Study, Radson Engineering Co., Macon, Ill.—25¢

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- ☐ No. 7720—Portable Conveyor
- ☐ No. 7721—Mobile Mill Operation
- ☐ No. 7722—Brochure on Services
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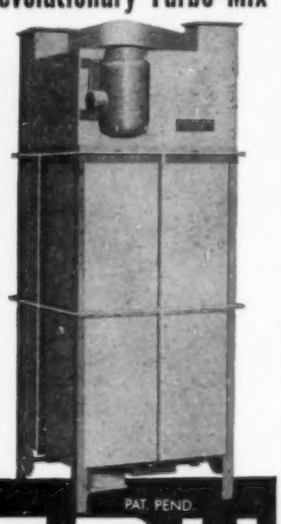

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Step-Down Lighting Program Discussed

ITHACA, N.Y. — Poultrymen who attended the Poultrymen's Get-Together at Cornell University were brought up to date on research being conducted by Heisdorf & Nelson Farms, Inc., Kirkland, Wash., on step-down lighting programs for rearing pullets.

Dr. Cecil F. McClary, Heisdorf & Nelson geneticist, told the group that the expected results from step-down light control for growing fall and winter hatched pullets are: An extra dozen or more eggs per pullet from higher rate of lay; larger eggs by about 1 oz. per dozen during the first four months of lay; delayed maturity by two to three weeks (on full feed); an increase in livability; and an increase in body weight of from 0.1 to 0.2 lb. (about 5%).

Dr. McClary said that the ideas behind the lighting work came from many sources. One source was the commercial egg producer. "As late spring and summer hatches became more frequent, phenomenal production records increased," he said. "To get some actual records on effect of 'date of hatch' on production, the same types of chicks were placed on the same farm every six weeks over a four year period. Chicks were brooded on wire with infra red lamps to six weeks and moved to growing cages on natural light from 6 to 20 weeks. They were moved to laying cages at 20 weeks and given a minimum of 14 hours light. Table 1 presents the records to 16 months of age, after which birds were mixed with older groups.

"The figures in Table 1 show that generally, summer hatches laid more and larger eggs. The results on egg size agree very closely with Prof. Skoglund's records published in Poultry Science," said Dr. McClary.

"In one's attempts to duplicate nature's best work in lighting growing pullets, it appears they neeed to mature on a short day," Dr. McClary noted. "A review of literature reveals that in 1953 and 1954 Prof. Platt delayed maturity (and increased rate of lay) by maturing pullets on a short constant day. Later, Marr and Associates published work showing that either an eight hour or 15 hour constant day length from 10 to 22 weeks of age was superior to natural light for winter hatches. Prof. Dale King developed the stimulite program by which chicks were grown on a constant short day and stimulated into production by weekly increases of about 18 minutes," stated Dr. McClary.

"Accepting the overwhelming evidence that controlling light for growing winter hatched pullets was beneficial, two questions faced this writer," said the speaker. "First, would it be necessary to consider light treatment in a breeding and selection program for genetic improvement? This question was answered satisfactorily for the present. All genetic types tested responded to growing light treatment in about the same manner.

"The other question was how could egg producers best apply light control? Were windowless force ventilated houses essential for use of light control? To answer this, 2,400 pullets in replicate pens were grown in windowless houses under three light conditions from hatch to 22 weeks of age. One group (Stimulite) had a six hour constant day, one a 15 hour constant day and one was started at 15 hours and reduced about 20 minutes each week (step-down grow). The pullets were moved to windowless laying pens for continued light control. Table 2 summarizes the results.

"All three systems compared in Table 2 were expected to show improved production over natural light for winter hatches," said Dr. McClary. "The step-down light grow condition gave more and larger eggs, even with a later start.

"The next approach was to test the step-down light treatment along with natural lighting on winter hatches. This required beginning the step-down treatment on a 22 hour day in order to be able to reduce the day length by 20 minutes each week for 22 weeks. This schedule reduced day length down to about 15 hours (natural day length) at 22 weeks of age.

"The first test indicated that the step-down light treatment worked in open houses by use of a 22 hour light day at the start. Additional tests have now been completed and others are under way. Results, in general, are in close agreement for various tests. Table 3 presents results of step-down and natural light comparisons on some late fall hatches.

"The step-down light program for growing fall and winter hatched replacement pullets continues to give us consistent results of delayed maturity, increased egg number, increased egg size, slightly increased body weight and higher liveability."

TABLE 1. Hen Housed Egg Production from Chicks Hatched Each Month of the Year (to 16 Months of Age). Average Three Hatches Per Month During Four Years. Records 1954-1959.

Month of hatch	Number of eggs per hen housed	% Large and over at 8 mo. age
January	228	67
February	214*	58
March	226	80
April	239	75
May	244	69
June	245	75
July	215*	77
August	247	67
September	218	76
October	219	67
November	213	62
December	211	58

*Contain one flock of extremely low records from disease outbreaks.

TABLE 2. A Comparison of Controlled Light Systems

Light treatment age, in weeks 0-22	Age at 50% lay	Egg weight at 8 mo. age	No. eggs per hen 22 to 79 wk.	% Mort. lay
Step-down grow	189	56.9 gm.	256	6
"Stimulite"	173	54.5 gm.	253	13
15 hours constant	174	54.8 gm.	254	9

TABLE 3. Step-Down vs. Natural Light for Growing Fall Hatched Pullets

Growing light treatment	Hatch date	No. pullets started	Body wt. 18 wk., lb.	Age at 50% lay	No. eggs per hen	Egg wt., gm., 8 mo.
Step-down	Nov. 6, 1958	1,405	3.06	188	249	57.8 gm.
Natural		1,425	2.89	170	233	55.7 gm.
Step-down	Nov. 20, 1960	1,344	3.25	187	Pullets only 7 mo. old at time of this report	
Natural		1,345	3.10	167		
					Rate—8 mo.	
Step-down	Oct. 21, 1960	1,137	2.93	184	*81%	57.3 gm.
Step-up		1,138	2.73	174	79%	55.4 gm.

*Peak rate of lay expected during ninth month.

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POULTRY PRINCESS—Londa Jane Boyd of Manheim, Pa., pictured above, is the newly crowned poultry princess of 14 northeastern states. She won out in competition at the annual Northeastern Poultry Producers Council exposition at Harrisburg, Pa. Londa Jane, age 17, is 5-2 and 105 lbs.

Agriculture Assistant Cleared of Pressuring Georgia Poultrymen

By Special Correspondent

WASHINGTON—Senate investigators have cleared John P. Duncan, assistant secretary of agriculture and a native of Georgia, of charges of pressuring the Georgia poultry industry and farm groups into supporting the Kennedy administration's farm bill.

Although the secret meeting of the Senate permanent investigating subcommittee was held Aug. 15, results of the inquiry and hearing were just disclosed this week. Sen. John McClellan (D., Ark.), committee chairman, said, "The alleged threats were not substantiated."

Among those appearing at the hearing were Abit Massey, executive secretary of the Georgia Poultry Federation; C. W. McMillan, executive vice president of the National Cattlemens Assn., and Robert E. Evans, Georgia Cotton Warehouse and Compress Assn. Witnesses from the National Cotton Council were also scheduled to testify but did not do so, when the hearings were called to a halt.

Records of the hearing were made public this week by Donald O'Donnell, the subcommittee's general counsel. They show that the investigation started as a result of a complaint by John Todd, executive vice president of the National Cotton Compress Assn.

He charged that Boyce Dyer, Georgia state director of marketing, had called Mr. Evans May 17 and threatened the group of warehousemen in the cotton industry.

The report said that on that date, Mr. Dyer called Mr. Evans saying that if the national cotton groups opposed the Kennedy farm bill, "they wouldn't get the increase in storage rates that they had wanted for the last three years."

Mr. Dyer testified before the committee, according to the report, that he did make the statement but that his source of information was "rumors" he had heard. He said he had heard the rumors at a conference of the state department of agriculture in Georgia, with Phil Campbell, state commissioner of agriculture, present.

Mr. Campbell also testified at the hearings that he called Mr. Dyer after receiving a telephone call from Mr. Duncan, who said he wanted to get all the support for the farm bill he could. Mr. Campbell said he then gave all subordinates in the state department "similar instructions."

Mr. Massey also testified Aug. 15 before the committee.

The committee's counsel said Mr. Massey was asked to testify after "information had been picked up that John Duncan had called him, too." These reports, the counsel said, involved charges and rumors that Mr. Duncan had warned the poultry industry was going to have trouble from the U.S. Department of Agriculture if it opposed the farm bill.

The executive secretary of the Georgia Poultry Federation admitted that Mr. Duncan had called, seeking support, but he said there were no threats or intimidations.

C. W. McMillan, the executive vice president of the National Cattlemen's Assn., in testifying said that Mr. Duncan made the "closest thing to a threat I've heard yet" when he talked with him April 17 in Mr. Duncan's office.

He was reminded, he said, that the department had $300,000,000 available to purchase surplus commodities and that support of the Kennedy farm bill would insure cattlemen that a proportionate share of these funds would be spent on beef.

These statements were heard during the one-day secret session, and the balance of the hearing was cancelled, according to Mr. O'Donnell.

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Stabilized Vitamins report

High Concentrate Rations Increase Vitamin A Need

• Rations high in rolled barley and/or milo provide marginal amounts of carotene, and even optimum conversion to vitamin A sometimes falls short of the needs for best performance, especially during periods of stress. This advice comes from W. H. Hale and Farris Hubbert, Jr., University of Arizona.

FEEDSTUFFS, April 15, 1961

Conversion of Carotene to Vitamin A *in vivo*

• Some birds produced vitamin A in less than five minutes after carotene was placed in the crop, but fifteen minutes were required by the majority of the birds. The vitamin was first found in the walls of the small intestine, but appeared in the liver three hours after dosing.

I. R. Sibbald and L. M. Hutchison, POULTRY SCIENCE 39:99, January, 1960

Calf Scours and Vitamin A Deficiency

• Dairy cows fed for long periods on bleached hay and/or silage from corn that was frosted before it was put up, often have calves that are so weak they die within a few days from scours and pneumonia.

Hoard's Dairyman, 1960.

Weeds, Nitrates, and Vitamin A Utilization

• The nitrate content of weeds in lowland pastures is definitely related to abortion in the cattle grazing them. The nitrate interferes with conversion of carotene to vitamin A as well as with storage of the vitamin in the liver.

Simon, et al J. Am. Vet. Med. Assn. 135:311, 1959.

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Centennial Nutrition Report from:

University of Nebraska

Beef, Swine and Sheep

By Dr. E. R. Peo, Jr.
Department of Animal Husbandry

Approximately 400 beef cattle, 800 head of swine, 600 lambs and numerous laboratory animals are used annually in nutrition studies conducted by the Animal Husbandry Department. For all three classes of livestock and the laboratory animals, excellent research facilities have been developed so that group and individual feeding experiments and nutrition digestibility and retention studies can be made. In addition, the effects of nutrition on carcass characteristics of cattle, sheep and swine can be determined with the meats research facilities available within the department.

E. R. Peo, Jr.

Ruminant Nutrition Research — Beef cattle nutrition represents the major research effort of the animal husbandry department in the ruminant field. Nutrition as it affects all phases of cattle production is being studied. A project entitled "Effects of Varying Energy and Protein Levels During the Winter on Productivity of Beef Cows" has been under way for two years. This is a long-term project and must be continued for several more years before any concrete recommendations can be made.

Protein and energy requirements of beef cows during the winter are critical in terms of maintenance of body weight, subsequent production and fertility. Thus, major emphasis is being placed on establishing protein and energy requirements of beef cattle for optimum production.

The use of pelleted rations in cattle feeding is being investigated. Here, emphasis is being placed on studying over-all management programs in which cattle are grown and finished on all-pelleted rations.

The effects of altering natural hormone levels in fattening cattle are being studied. The main objective is to determine the effects of hormones on carcass characteristics. Lambs are being used extensively in this aspect of ruminant nutrition. Hormones being studied are testosterone and thyroxine, singly and in combination. In the future, ruminant nutrition research effort will be concentrated on factors affecting efficiency of production and carcass desirability.

Swine Nutrition Research — Percentagewise, protein and carbohydrates are the major nutrients in swine rations. Thus, research in swine nutrition is based on the premise that improvement in the utilization of these two nutrients by swine will result in more efficient production. Research projects have been developed on dietary factors affecting the utili-

(Turn to PEO, page 84)

Dairy Cattle

By Dr. P. L. Kelly
Chairman, Department of Dairy Husbandry

One of the greatest resources on Nebraska farms is roughage. While a great deal of research has been carried out in this field, changing conditions have brought developments in areas where the work which can be applied is limited. We have done work in several of these areas.

P. L. Kelly

Work with Irrigated Pastures — One of these was in the management of irrigated pastures. From the data obtained over a five-year period we found that on the average one acre of irrigated ladino pasture would produce more than two to three dairy cows could consume. It was estimated that some of the pastures yielded 4 to 5 tons per acre. Several of our mixed grass-legume pastures produced over 300 cow-days of pasture per acre under the conditions of the experiment.

Dry Lot vs. Pasture—Another study compared 38 animals paired as two-year-olds in two groups. One was kept on the best irrigated pasture possible. The other was kept entirely on dry lot. They remained on experiment either to the end of their useful life or until the five year period was ended. During this long period there was no detectible difference between the animals in the two groups either in production or health. As herd size becomes larger there may be more dairy farms which have dry lots for their dairy herds.

Silage Work—In silage experiments sterile sorghum varieties were compared to standard sorghums and corn in a feeding experiment with dairy cows. While the corn silage was slightly superior, the sterile hybrids proved to be practically equal to Axtell sorghum in feeding value. This indicated that they may be substituted for fertile types if the other characteristics of the sterile varieties show advantage in crop production.

Work is also in progress which compares the feeding value of sorghum silage cut at various stages of maturity. Indications at present are that perhaps we have placed too much emphasis on early cutting in the past since there appears to be little difference in feeding value between the various stages when compared on the dry matter basis.

Work recently started includes using much larger amounts of corn in the preservation of alfalfa silage. Here we hope to make a silage which can be fed to cattle which will contain a sufficient amount of energy for the maintenance of a herd in heavy production. The combination of corn and alfalfa in one feed may serve as a better means of preserving the feeding value of the corn and also reduce the labor of feeding. This project is as yet too new for results to be obtained.

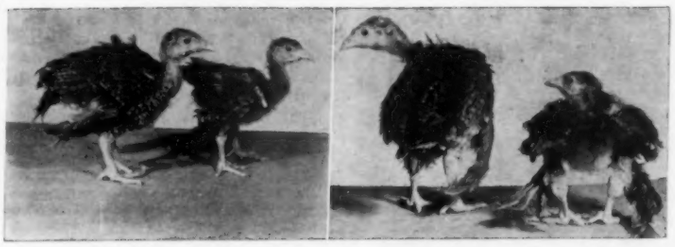

FIGURE 1—These photos show the effect of zinc on the growth, feather development and bone development of four-week old poults. The bird on the right in each photo was fed the basal diet containing 14 ppm. of zinc. The bird on the left in each picture was fed the basal diet plus zinc supplementation which increased the total to 44 ppm. zinc.

Poultry

By Dr. T. W. Sullivan
In Charge of Poultry Nutrition Research

In the poultry husbandry department four research projects concern nutrition studies. The purposes and goals of these projects are as follows:

T. W. Sullivan

Mineral Requirements of Poultry— The specific objectives of this study have been threefold. Six experiments have been conducted to determine the calcium and phosphorus requirements of turkeys between 8 and 24 weeks of age. Data already accumulated indicate that the calcium and phosphorus requirements of such birds are less than previous standards. These requirements have been clearly defined.

Several experiments have been conducted to determine the zinc requirement of starting turkeys and laying hens.

Finally, the role of minerals, especially calcium, in egg production and the alleviation of "cage fatigue" in laying chickens is being investigated. Figure 1 illustrates the effect of zinc on growth, feather development and bone development in 4-week-old turkeys.

Evaluation and Utilization of Feed Additives in Poultry Rations — Experiments are being conducted to compare and evaluate various feed additives in rations for laying hens and growing turkeys. Eight different antibiotic supplements have been tested singly and in various combinations in turkey rations. The effects of environment, certain management practices and age or stage of growth on the bird's response to such additives are also under investigation. It is believed that these results will help to explain the amazing and often puzzling responses to feed additives, and demonstrate the most economical means of utilizing them in poultry production. Figure 2 illustrates the effect of age or period of growth on the turkey's response to dietary antibiotics supplements.

Influence of Diet on Egg Yolk Pigmentation—This study was initiated for reasons that are becoming quite obvious to feed manufacturers. A proper and consistent pigmentation of egg yolk is important to egg producers and breakers as well as the consuming public. Deeply pigmented (NEPA No. 4 and 5) yolks usually sell for 5-7¢ more per pound than yolks having less pigmentation or color.

In this work, the utilization of xanthophyll and certain carotenoid compounds by the laying hen is being studied. The extent to which dehydrated alfalfa meal can be used in rations for laying hens to increase egg yolk color will be determined. Different samples of alfalfa meal will be tested with regard to their ability to enhance egg yolk color.

Amino Acid Supplements and Feed Management for Turkey Breeder Hens—Since the nutrition and management of turkey breeder hens is instrumental in realizing the genetic potentiality of the birds, more information is needed on amino acid supplementation of breeder hen diets and their feed management to obtain

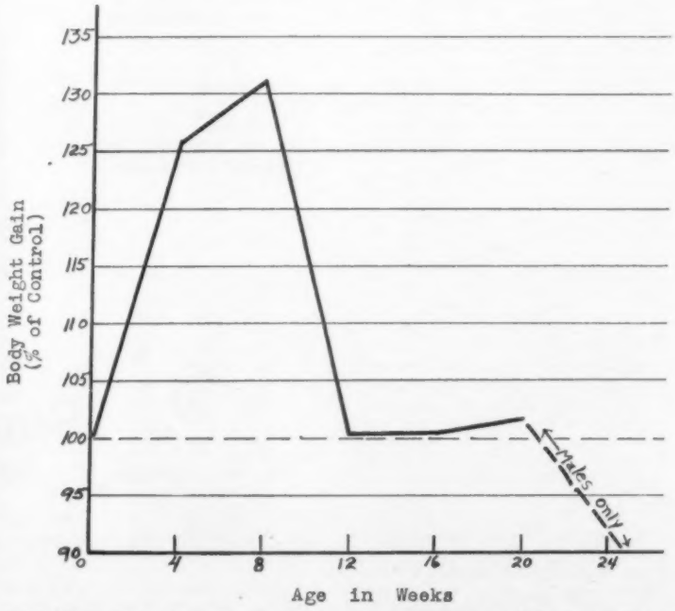

FIGURE 2—This chart illustrates the effect of age or period of growth on the antibiotic response in Broad Breasted Bronze turkeys.

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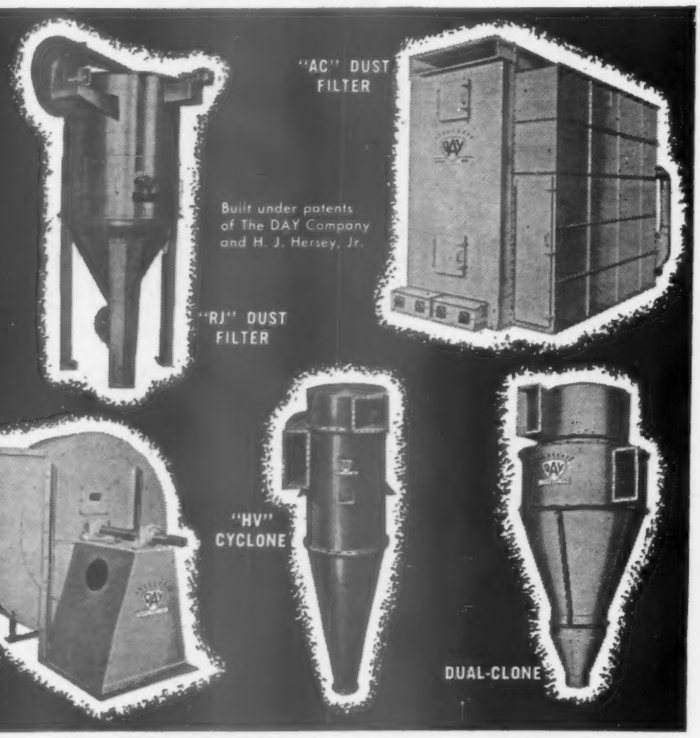

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SUGGESTS USE OF MODELS IN MILL DESIGNING

KANSAS CITY—Here's a feed mill layout and design idea from an Australian.

C. E. Quinlan, a Sydney, Australia, plant design consultant, suggested while attending the 1961 Feed Production School here that scale models of feed mill equipment could be fashioned by equipment suppliers and mill designers to provide prospective purchasers and builders a three-dimensional perspective of processing flow and machinery positioning for any size of mill in the planning stages.

Mr. Quinlan said this engineering service is common in Australia. The machinery and equipment models are made of plastic or balsa wood.

maximum reproduction performance. Amino acids are being supplemented to basal diets to determine if there is any improvement in egg production, hatchability and fertility. Also, the influence of restricted feeding of turkey hens on reproductive performance is being studied. Leader for this project is Dr. W. J. Owings.

PEO

(Continued from page 82)

zation of protein and energy by swine for pre-weaning and post-weaning growth, for carcass development and for reproductive performance.

The dietary factors currently being investigated are amino acids and hormones. Amino acid research has developed around lysine and methionine and their effects on the utilization of grain (corn and milo), soybean meal rations and on carcass characteristics of swine. In hormone research, major effort has been concentrated on investigations with thyroxine. The effects of exogenous sources of thyroxine on growth rate, nutrient utilization, carcass characteristics and on lactation performance of swine are being studied.

Future research will be centered on determining the effects of amino acid supplementation of all-plant rations on the reproductive performance of swine and on the interrelationship of thyroxine and the so-called "sex hormones" on nutrient utilization by swine.

Program Developed For Ohio Convention

WORTHINGTON, OHIO — Planning of a program for an expected 1,200 attendance at the 1962 annual convention of the Ohio Grain & Feed Dealers Assn. is well under way, according to A. J. (Al) Koppenhafer of Bowling Green, Ohio, chairman of the convention committee. Site will be the Commodore Perry Hotel in Toledo, with the convention opening Sunday, Feb. 18.

Several nationally-known speakers will appear on the program, which will cover pertinent problems of the industry in the 60's.

Convention committee members besides Mr. Koppenhafer are: George Deering, Greenwich; Clair Geiger, Wauseon; Kenneth Marshall, Toledo; Harry Maurer, Wapakoneta; Stanley Shelly, Wooster and Richard Stimmel, Perrysburg.

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Feed Conference Features Basic Information

COLLEGE PARK, MD.—"Management and medicine—especially preventive medication—offer greatest promise for disease prevention and profitable performance in poultry" was the dominant theme of the recent University of Maryland Feed Service Conference.

More than 150 feed service men and others interested in the poultry and livestock industries attended the conference on the University of Maryland campus. A new type of program was featured, which emphasized basic, textbook-type of information to better enable feed service men to make decisions concerning problems faced by their clients.

Growers were urged to buy chicks with top vigor as the best assurance of success. Equally important, concerning several diseases — currently plaguing poultrymen—is the purchase of disease free stocks. This is particularly important with airsacculitis, or air sac, and leucosis. The conference was also told that recent experimental work with leucosis lends support to the idea that mortality losses can be reduced in the laying house by the use of a restricted feeding program during the growing period. Substantially the same results may be possible through controlled lighting programs that will delay sexual maturity.

Turning to the over-all problem of disease prevention, Dr. E. I. Robertson, John W. Eshelman & Sons, Lancaster, Pa., points out that "preventive medication provides a degree of protection while the flock is developing immunity from exposure to natural or artificial infection to the extent that vigor is not overwhelmed by the infection before immunity is developed. Wide and successful use of several effective coccidiostats attests the success that attends this combination of management and medication."

Dr. John M. Curtis, head of the agricultural economics department at the University of Maryand, emphasized the point that records kept for records' sake are worse than useless. First, he says, decide what your objective is and plan your records around the question, "What information do I need?" You need information which will permit you to develop a plan leading finally to the achievement of your objective. By answering the question of the kind of information you need, you can then easily design the forms used for record keeping. Your objective not only guides your records development, but also guides the development of a set of controls as used in management. Controls enable you to check on how well you are following the plan toward your objective. A good set of controls wil spotlight areas of management where corrective action should be taken.

The conference closed with a session devoted to the effects of temperature on livestock and poultry. It was pointed out that for all types of livestock, reactions to various environments vary greatly within breed as well as between breeds. Breeding for increased adaptability is receiving attention but progress will be slow. It appears that the most rapid progress in increasing livestock efficiency under inclement climatic conditions will be through improved management, the group was told.

GUEST SPEAKERS AT MARYLAND EVENT—Guest speakers who discussed the environmental aspects of disease prevention for poultry at the recent Maryland Feed Service Conference on the University of Maryland campus are, left to right, Dr. E. I. Robertson, John W. Eshelman & Sons, Lancaster, Pa.; George F. Wolf, Salisbury, Md., who presided at this session; Dr. S. C. King, poultry research, U.S. Department of Agriculture, Beltsville, Md.; Dr. A. C. Cuckler, Merck & Co., Rahway, N.J.; and Dr. Erwin L. Jungherr, Lederle Laboratories, Pearl River, N.Y.

New Oregon Districts

PORTLAND, ORE. — Formal organization of two new districts of the Oregon Feed & Seed Dealers Assn. was completed when association officers met with member firms in the Ontario-Nyssa and LaGrande-Pendleton areas.

At Ontario, 29 representatives were present at the organizational meeting at which Dwight Wuckoff, Farmers Feed and Seed, Nyssa, was installed as district governor. During a business session the group approved Treasure Valley as its official district name.

The following night 27 representatives gathered at LaGrande where Ed Draper, Pioneer Flouring Mills Co., Island City, was announced winner of a mail poll as district governor. Blue Mountains district was selected as official name for the area.

Organization of the two districts increases the statewide divisions of the association to eight. These include Treasure Valley, Blue Mountains, Metropolitan Portland, Washington County, Salem, Albany-Corvallis, Eugene and Southern Oregon.

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Broiler Areas' Competitive Positions Analyzed

ORONO, MAINE—An analysis of the competitive position of the New England broiler industry offers information of interest to feed men and poultrymen in all areas.

The analysis was made by Frank D. Reed, poultry marketing specialist at the University of Maine, in a talk prepared for the University of Connecticut Broiler Day.

After reviewing cost data and other information, Mr. Reed concludes that the future of the New England broiler industry lies in putting out a premium quality product, and in restriction of production to the limitation of this premium type of market. He also called for lower freight rates on feed ingredients or use of water transportation, and he described the milling-in-transit system as "antiquated."

Mr. Reed's analysis was based on economic studies, his own observations over the years and a tour of southern broiler areas.

Rapid growth in the South and a slowing of the expansion rate in the older broiler areas of Delaware, Maryland and Virginia were noted. In New England's two broiler areas, Maine production has been about stationary for three years while Connecticut has declined 30%. The most recent development is the new broiler production in the Upper Midwest, where grain costs are the lowest in the nation.

In his analysis, Mr. Reed considered basic economic factors only. These are: Basic feed ingredient costs (corn and soybean); the contract grower payment, which is a reflection of labor rates and housing costs, and transportation costs to a particular market (New York and New England).

Mr. Reed goes on to say:

Feed Costs

Feed costs represent roughly 60% of the cost of producing broilers. In my analysis I have considered only the basic ingredient costs in the broiler ration. Mixed broiler ration prices are meaningless since they are a reflection of type of organization, trade practices, mark-ups, etc.

A standard broiler ration consists of about 60% corn, 22% soybean oil meal, and 18% other ingredients. Applying actual ingredient prices in the various areas, we come up with a broiler ration cost as follows December, 1960:

New England	$3.00
Delaware-Maryland-Virginia	2.99
Georgia (Gainesville)	2.76
Alabama (Cullman)	2.68
Arkansas (Northwest)	2.57

This is a disadvantage for New England of 24¢/cwt. or $4.80/ton in relation to Georgia, and 43¢/cwt. or $8.60/ton relative to the lowest cost area—Arkansas.

Converting this feed cost to a pound of broiler (based on 2.3 conversion), it comes out to a feed cost handicap for New England of about 1¢ per pound relative to Arkansas and about ½¢ relative to Georgia.

Broilers in almost all commercial areas are produced almost entirely under contracts. In spite of the wide variation in the type of contracts, there is in all areas a recognition of the minimum grower payment necessary to obtain and keep good growers. The grower payment rates of the areas are as follows:

Maine	2.5c/lb.
Southern areas	2.0c/lb.

A complication in interpreting rates is that generally in the South the grower must furnish fuel and litter out of his payment, while in Maine and Delmarva these items are furnished by the contractor. Adding the estimated cost of these items to the contractor's expense in the areas where he furnishes them we come up with a growing cost as follows:

Maine	3.0c/lb.
Delaware-Maryland-Virginia	2.5c/lb.
South	2.0c/lb.

Using feed ingredient costs and grower payment costs as the measure of cost of production we find the relative cost disadvantage of the areas as follows:

Arkansas	.00c/lb.
Alabama	.25c/lb.
Georgia	.45c/lb
Delaware-Maryland-Virginia	1.47c/lb.
Maine and New England	2.00c/lb.

Best production costs alone do not determine the economic position of an area. Marketing costs (transportation) must be considered, and there are physical limitations as to how far fresh iced poultry can be shipped without quality losses.

With respect to the New York and Boston markets, here is the picture as to transportation cost:

	N.Y. City c/lb.	Boston c/lb.
From central Maine	1.00	.50
From Arkansas	2.50	2.75
From Delmarva	.55	1.00
From Alabama	2.20	2.45
From Gainesville, Ga.	2.10	2.35

In Connecticut you have an advantage over central Maine with respect to the New York market. I do not have the figures but expect that the rate would be about the same as that from Delmarva.

To ascertain the competitive position of each of the broiler areas it is necessary to add to the production cost the transportation differential to the particular market being considered.

Maine's disadvantage with respect to the New York market is 1.2¢/lb. compared to Delmarva and Georgia. Connecticut's position with respect to New York would be somewhat more favorable than Maine's. In regard to Boston, there is not much question as to our favorable competitive position.

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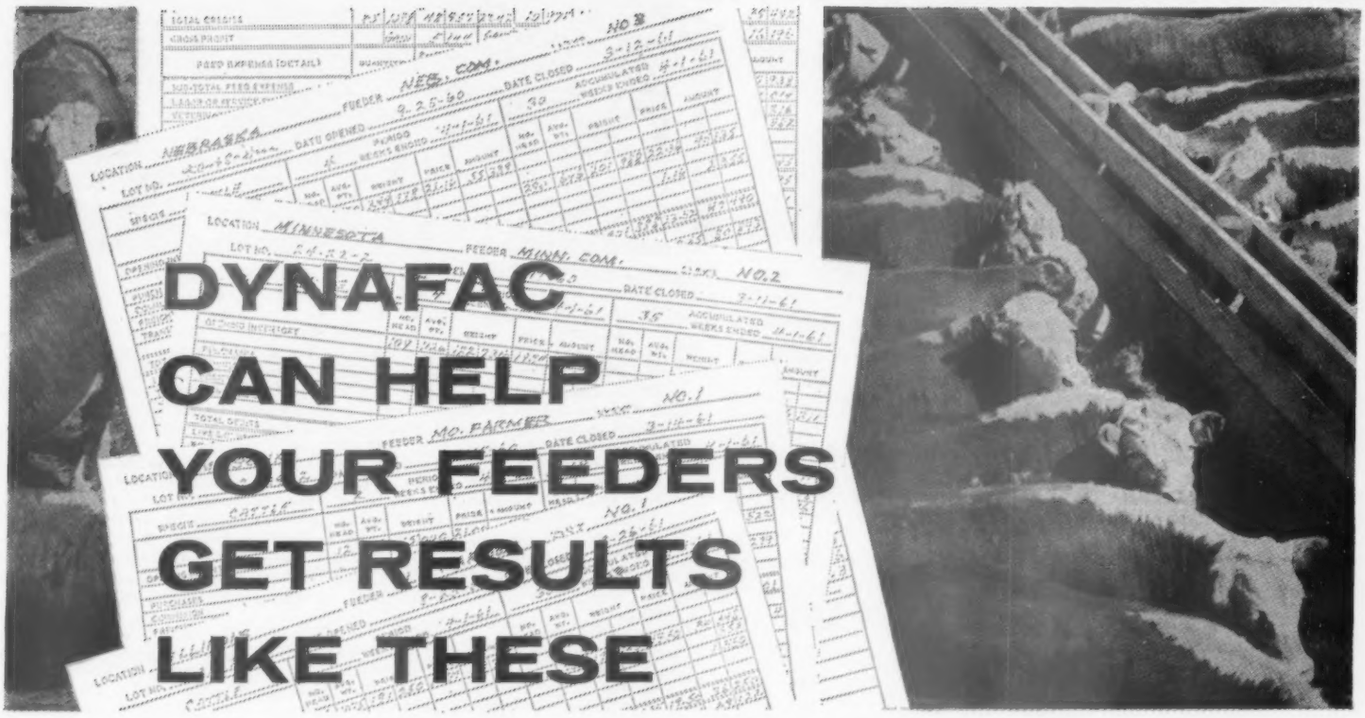

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FEED CONVERSION (lb. feed/lb. gain)		9.5	10.5	8.5	8.7	20.2
DAILY GAIN (lb./head)		2.71	2.83	3.28	2.96	1.84
DAILY FEED INTAKE (lb./head)		25.6	29.6	27.9	25.6	37.1
NO. OF FEEDLOTS		3	9	2	7	3
NO. OF HEAD		1,223	2,255	466	2,005	848
TYPE OF RATION	(primary)	Corn	Corn	Corn	Corn	Corn Silage
	(secondary)	Alfalfa-Molasses	Corn Silage	Hay	Molasses	Corn

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PILLSBURY TRAINS OHIO FEED DEALERS—A three-day dealer refresher school was conducted in Lima, Ohio recently by F. J. Steinmetz, feed division training manager, The Pillsbury Co., Minneapolis.

Attending the school were: Seated, left to right: Charles Lemaster, Max Latham Grain Co., Unionville, Ohio; James R. McCullough, Campbell Elevator, Hebron, Ohio; Bill Hencile, Kenton (Ohio) Grain & Machinery; Zane Brady, Forest (Ohio) Grain & Supply; Donald Hoffman, Copley (Ohio) Feed & Supply; Robert Kirgis, Bettsville Feed & Grain, Carrothers, Ohio; Norman Kahle, Kahle Supply & Feed Mill, Kalida, Ohio; and Larry Maag, Frogtown Elevator, Ottawa, Ohio.

Standing left to right are: Mr. Steinmetz, Pillsbury; Edward Aring, Bettsville Feed & Grain, Helena, Ohio; Roy Bardin, Bettsville Feed & Grain, Bellevue, Ohio; Herm Berry, Berry Feed Store, Parkersburg, W.Va.; Jim McAllister, Pillsbury; Donald Swander, Bettsville Feed & Grain Co., Clyde, Ohio; Millard Gaskin, Feesburg (Ohio) Feed & Supply; H. C. Shaw, Winchester (Ohio) Milling Co.; A. H. Miller, Pillsbury; R. L. Putnam, Pillsbury; Richard Royster, Nau Grain Co., Lippincott, Ohio; Fred DeLeon, Nau Grain Co., Plain City, Ohio; and Russell Ellenberger, Bettsville (Ohio) Feed & Grain.

depend quite heavily on the New York market. We are able to compete only on the basis of obtaining a premium price for our product. This we have been able to do in the past and we are currently doing so. The reasons for this quality premium are a study all in itself. Part of it is probably due to nearness of market with increased shelf-life for the product; part of it is due, I believe, to an actual superior quality of product, and uniformity of grading and pack.

The future of our New England industry lies in putting out a premium quality product, and in restricting our production to the limitations of this premium type of market. We would be very unwise, I believe, to try to expand into the volume market. Our industry here must concentrate on quality and merchandising.

One additional comment in regard to feed costs in New England. We are in the highest grain cost area in the country. Our feed distribution system and freight rate structure are based on the milling-in-transit privilege. This system is antiquated in view of the inevitable trend toward bulk feed and decentralized milling of feed. Lower freight rates on feed would unquestionably be possible without the milling-in-transit rate system. It is time, I believe, that New England producers—both eggs and broilers—took an active interest in the current efforts to obtain lower rail freight rates, and in the possibilities of water transportation to this area.

Most Dehy States Shift In Rank by Production

KANSAS CITY — While Nebraska has remained the nation's leading dehydrated alfalfa producing state, the rank of other states has changed in recent years, according to a comparison report issued by the American Dehydrators Assn.

Since the 1952-53 dehy production season, California has replaced Kansas as the second largest producer and Kansas, now third, has pushed Colorado down into fourth place. Annual production reported for 1960-61 shows Ohio still in fifth place; Missouri in sixth place instead of Texas, which dropped to ninth; Pennsylvania up from eighth to seventh, and Iowa up from ninth to eighth.

Of the nine leading dehy producing states, Ohio showed the greatest percentage of increase from 1952-53 to 1960-61—90.8%. Nebraska's increase was 51.5%. Colorado and Texas are the only states in the top nine which have recorded decreases, while Kansas' production has remained generally unchanged over the years.

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Canadian Cattle Feeding Tests Reported

WINNIPEG — Canadian researchers have reported on a study of all-grain rations for finishing beef cattle. The report on research comparing an all-grain ration with a hay and grain ration for fattening steers in two environments was one of several reports made in connection with the University of Manitoba Livestock Day.

Here are the conclusions from the all-grain ration study with 24 steers:

1. That an all-grain ration (3 parts dry rolled barley to 1 part dry rolled oats plus a vitamin A-mineral supplement) can be satisfactorily used for fattening beef steers.

2. Average daily gain of animals receiving a 75% grain and 25% hay ration was slightly superior to animals receiving an all-grain ration.

3. Feed required per 100 lb. of gain was approximately 14.8% less for animals receiving the all-grain ration. However, estimated net energy required per 100 lb. of gain was only 6% less for animals receiving the all-grain ration.

4. Average feed costs per 100 lb. of gain were less for animals receiving an all-grain ration.

5. The feed costs for animals maintained inside a heated barn (temperature range from 42° to 59° F. above zero) were slightly less than for comparable animals maintained outside. There was a 21¢ difference per 100 lb. of gain, which would hardly pay for the cost of heat in the more elaborate environment.

6. In the rumen of a few animals small dark colored areas were observed where feed had compacted between the papillae. This condition was not associated with ration or performance of the animal.

7. Apparent energy and dry matter digestibility of the grain and hay ration was slightly higher than the all grain ration.

Feed Preparation

Another study dealt with grinding, rolling or pelleting the concentrate ration for steers and with the advisability of feeding oral stilbestrol to cattle already implanted with the hormone. Both hand feeding and self-feeding were used.

Results of this test did not indicate any advantage for rolling over grinding on either feeding regime; differences were small. Similarly pelleting a self-fed grain ration did not significantly change the results. Decidedly poorer gains and feed efficiency of the hand-fed pelleted group were surprising and unexplainable but were responsible for poor performance of the combined pelleted lots.

The data on stilbestrol indicated a slight advantage in implanting cattle receiving stilbestrol in oral form so far as daily gains were concerned. Implanting had no effect on carcass quality.

Swine Studies

Reporting a swine antibiotic study, researchers said that, based on tests over a period of 14 months, antibiotics as a group improved daily gain and feed efficiency by about 4%. Averaging four tests, improvements in feed efficiency for the different antibiotics ranged from 2.3 to 5.5%. The researchers said use of Terramycin gave the former figure while use of streptomycin - penicillin - sulfaquinoxaline or oleandomycin gave the latter figure. Prostrep, oleandomycin-Terramycin and Aureomycin in that order gave intermediate results.

From a study on confinement vs. outside raising of growing-finishing swine, researchers said: (1) Outside raised pigs with no pasture gained more slowly, consumed more feed and were less efficient than pigs raised in confinement. Carcass quality was better in the pigs raised outside. (2) Outside raised pigs on pasture showed a slower rate of gain, lower feed consumption, better feed efficiency and better carcass quality than pigs raised in confinement.

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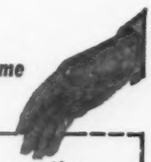

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Centennial Nutrition Report from:

Oklahoma State University

Poultry

By Dr. Rollin H. Thayer
Poultry Science Department

Poultry nutritionists at Oklahoma State University have initiated an extensive research program in the areas of market turkey and layer hen nutrition which is designed to obtain the basic nutrition data required to attain maximum nutrient utilization.

R. H. Thayer

The first step in the nutrition research program with growing turkeys was to design a series of starter and grower rations which would permit turkeys to grow at the maximum rate permitted by present genetic potentials. In order to establish basic nutrient requirements for the maximum rate of growth, experimental rations were formulated with no consideration being given to ration cost. The prime objective was to provide essential nutrients in the quantities which would be required even though this might mean using feed ingredients not commercially available to the feed industry. Experimental rations used in this research included such ingredients as dried whole egg solids, casein, blood meal and biotin, a vitamin which is currently priced at $10 gm. The cost of the ration formulated from these ingredients was approximately $28 cwt. Data from a series of feeding trials in which rations containing these ingredients were fed demonstrated that within present genetic potentials of commercial strains of turkeys it was possible to produce a pound of market turkey on 2.25 pounds of feed. In addition, a significant reduction was made in the length of time normally required to grow a market weight turkey.

Second Step

The second step was to utilize the basic nutrient requirement data thus obtained in formulating lower cost rations using feed ingredients commercially available to the feed industry at the present time. Nutrient Intake Standards derived from data obtained in the original series of feeding trials were incorporated into a linear programming program.

Ration cost was taken into consideration in making cumputations and the linear programming program was so designed that least-cost rations would be obtained within the Nutrient Intake Standards which were used. As rations were formulated by the electronic computer they were tested in a series of feeding trials. This procedure made it possible to reduce ration cost from $28 cwt. to $10 cwt. These practical-type rations produced a pound of market turkey on 1.85 lb. of feed. This was a significant improvement over the results obtained with the original experimental rations.

Starter, Grower Rations

The starter and grower rations formulated on the electronic computer could not be used under practical feeding conditions because of limitations imposed by the high level of liquid fat which was required, the unavailability of certain protein concentrates, and the relatively high cost of certain feed ingredients which made ration cost prohibitive. For this reason a series of Nutrient Intake Standards were developed in which these limitations were for the most part eliminated. These Nutrient Intake Standards were used to formulate a series of practical starter and grower rations. These rations were fed in commercial field tests during 1960 with outstanding results. A pound of market turkey was produced on 2.8 lb. of feed with a reduction in the length of time normally required to reach market weight of three weeks for toms and five weeks for hens. Feed cost per pound of turkey produced was approximately 13¢. The Nutrient Intake Standards, practical feed formulas, feeding direc-

(Turn to THAYER, page 94)

Beef Cattle, Sheep and Swine

By Dr. Allen D. Tillman
Animal Husbandry Department

The nutrition work in the animal husbandry department is both basic and applied in nature. The basic work is conducted in close cooperation with the departments of biochemistry, physiology and bacteriology.

A. D. Tillman

One project concerns the development of a purified diet for ruminants that will promote a fast rate of growth. Using a diet in which the chemical structure of all nutrients is known, gains in excess of 0.35 lb. per day have been obtained in lambs. The diet is composed of alpha cellulose, dextrose, starch, triglycerides, vitamins, minerals and inert ground plastic resin, and crystalline urea as the sole source of dietary nitrogen. The purified diet has been used to study the effects of various additives upon sheep gains. The addition of alanine, lysine, methionine, diethylstilbestrol or a mixture of the "B-Complex" vitamins has not altered sheep gains. Gains, however, have been greatly improved by the addition of an alkaline mineral mixture which is similar in composition to the ash of alfalfa hay.

Using the purified diet, it was found that molybdenum was not, in contrast to other reports, an essential mineral for sheep. This diet will be used to determine the essentiality and requirements of other mineral elements. As all minerals are supplied individually as mineral salts, the diet can and will be adapted for mineral imbalance studies.

In another project, it has been shown that processing conditions can affect the nutritive value of cottonseed meal for ruminants. The two factors appear to be gossypol and heat. When cottonseed meal containing gossypol is heated, the gossypol apparently combines with certain of the amino acids in the cottonseed meal and the digestibility of the product is reduced.

The phosphorus combined in the phytic acid complex in wheat bran was found to be utilized by sheep. Using radiophosphorus it was found that the "true" digestibility of phosphorus supplied by wheat bran appeared to be lower than that supplied by inorganic phosphorus. Nevertheless some of the phosphorus in wheat bran, was available for use by the animal. The availability of phosphorus in other natural feedstuffs will be studied in future experiments.

SHEEP RESEARCH—In dry lot feeding trials with sheep, it has been found that grain sorghums are equal in feeding value to corn. When a sheep diet containing a 1:1 ratio of concentrate-to-roughage was pelleted and fed to lambs, gains and feed efficiencies were increased; however, the increased costs of grinding and pelleting make this an unprofitable operation. Stilbestrol implants (3 to 6 mg.) have increased weight gains in all tests. Chlortetracycline (aureomycin) when added to the ration or to the salt mixture has increased sheep gains in some trials.

CATTLE RESEARCH—One longtime project concerns the effect of plane of nutrition during the wintering season and age at time of first parturition upon lifetime performance of beef cows. The project is now in its 13th year and over 500 females have been used in the project.

The results give some idea of desirable "life cycle" nutrition of the beef female. Two extremes are apparent from the results. If the plane of nutrition is too low during the growing phase, reproduction is delayed and milk production is poor, resulting in a poor calf. In contrast, if the female is fed too much feed during the winter season, she becomes too fat resulting in impaired poor production and a shorter life span as compared to control animals fed at a low level.

It would appear that heifer calves, bred to calve as 2-year-olds, should gain about 0.5 lb. per head daily during the winter season. Once the mature weight and size is reached, the beef cow can lose 20% or more of her body weight, if she is to calve in the spring. Recovery is rapid during the summer and cows so treated live longer than those fed on a high plane of nutrition during the fall and winter season and maintained on grass during the spring and summer seasons.

Subsequent studies will involve feed restrictions during the entire year. More detailed information will be ob-

Dairy

By Dr. L. J. Bush
Department of Dairying

If the average level of production of cows throughout the country moves at a reasonably rapid rate toward the pinnacle of performance already demonstrated by the top producers of the various breeds, numerous changes will need to be made in the formulation of rations for milking cows. The problem will no longer be one of determining how much to limit the intake of concentrates under conditions of maximum intake of forage of different qualities, but rather how to maximize the intake of nutrients using only feeds having a high concentration of nutrients, whether it be forage or grain. For such cows, only top-quality forage can be used and it may be desirable to feed it in a compressed form such as wafers to allow as much capacity for grain intake as possible. Thus, grain will likely make up an even more important part of the total ration for milking cows than it does today, and the effects of different methods of processing it in preparing dairy rations will become more critical.

L. J. Bush

Research is under way at Oklahoma State University to determine the effects of different methods of feed preparation on the performance of lactating cows. An evaluation is being made of the effects of different processing treatments, i.e. (a) grinding only, (b) grinding and steaming, (c) grinding, steaming and dry heating, on certain biochemical characteristics of milo grain and its value in rations for high-producing cows. The grain constitutes one-half by weight of the total feed intake, with the forage being fed in the form of alfalfa hay wafers. Milk composition with respect to total solids, fat, protein and degree of fat saturation (iodine No.) is also being determined.

Goal and Emphasis

The main goal of this research is to determine what processing treatments are beneficial in preparing milking rations and to relate the biochemical changes in the grain (dextrinization of the starch, changes in rate of starch breakdown, total solubles, protein solubility, etc.) to the performance of animals receiving these rations. Particular emphasis is being placed on measuring the effect of different processing treatments without confounding due to differences in particle size or some other factor. Therefore, the ultimate goal is to identify processing treatments which will bring about such changes in the grain used in milking rations as will make for more efficient utilization of these rations in producing milk.

Future research at O.S.U. involving milking cows will likely be directed toward evaluation of still other processing treatments of grain, and also toward determining the factors involved in maintaining normal rumen function and health on different types of rations.

The major emphasis at present with regard to calf nutrition research is to develop better starter rations for early-weaned dairy calves. The ultimate goal of this work is to develop a dry starter ration that would be readily consumed by dairy calves during the first few weeks of life and which would promote rapid rumen development and function. The possible value of adding supplementary enzymes to such rations for calves weaned at 28 days of age is being investigated by adding graded levels of specific enzymes to the rations separately and in combination.

Milk Replacer Rations

Another area of study involves milk replacer rations for calves. The percentage of protein needed in a replacer to be fed from three days of age until weaning has been a subject of recent investigation, as has the question of temperature at which a replacer is fed and the extent of coagulation of it in the calf's stomach.

Research in the area of calf nutrition in the future will likely be directed toward solution of some of the problems involved in feeding calves a dry milk replacer during the first few weeks of life.

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tained on the physiological development of calves from cows wintered at different planes of nutrition.

Body Fat Study

In a companion study, conducted in dry lot using identical twin cows, the influence of excessive body fat upon the performance of beef cows is being studied. One member of the twins is fed excessive levels of grain during two stages of its life cycle while the other receives a restricted energy level. Excessive fatness, induced during the period between weaning and first parturition, has had very little influence on the breeding efficiency of the cows, but calving difficulty and mortality of new born calves have been increased greatly. Milk production in the fat cows was reduced by an average of 26%. Excessive fatness in the mature cows had no effect upon reproductive performance or upon milk production. In the future expansion of the project, the influence of extremely high levels of nutrition between the period of birth and seven months of age upon reproductive performance and milk production of cows will be determined.

Milo Tests

The beef cattle fattening industry in Oklahoma is built around the sorghum grains, thus the effects of feed additives and methods of processing the sorghum grains are an active field of research.

Finely ground and pelleted milo produces about 8% more efficient gains than dry-rolled milo; however, the unpelleted but finely ground milo is superior to the pelleted product. Steamed and rolled milo has given poorer results than that produced by other processing procedures. Pelleting does not improve rations having 65% or more of milo.

The effect of two levels of nutrition upon efficiency of conversion of protein energy has been studied in a nutrition study with fattening steers. The levels of nutrition have been termed "moderate" and "high" and for carcass analysis, data have been obtained on steers fed to the same final weight or after the same length of time on feed. Results of the experiments in which both groups of animals weighed the same when sacrificed indicate that the animals making moderate gains (1.3 lb. daily) produced 8% more lean meat than those fed at a high level. The percent of bone was the same in the two groups of animals, thus the percentage fat was much less in the animals on the lower plane of nutrition.

When the animals were sacrificed at the same time after being placed on their respective rations, animals receiving the high plane of nutrition produced the most desirable carcass. The future studies under this project will concentrate upon the relationship of nutrition and resulting growth curve of beef animals. Composition of the carcasses in terms of protein, fat, water and bone will be the criteria in these series of studies.

Pelleted Rations

Pelleting rations containing low levels of concentrates improved the performance of steers fed for growth and fattening, but pelleting rations having high levels of concentrates decreases rates of gains of steers. The "why" of these effects remains unanswered and will receive attention in the future work. In a companion study, steers are being fed "all-concentrate" rations and are being used to study the effect of various adjuncts upon rates and efficiency of gains in steers.

Range Nutrition

In range nutrition studies, it has been found that the addition of trace minerals or small amounts of dehydrated alfalfa meal improved rations in which urea provided one third of the nitrogen in a 40% protein equivalent supplement. Addition of trace minerals to a protein supplement containing cottonseed meal did not improve gains; however, general appearance of the animals was improved. Future work is designed to study factors affecting urea utiliza-

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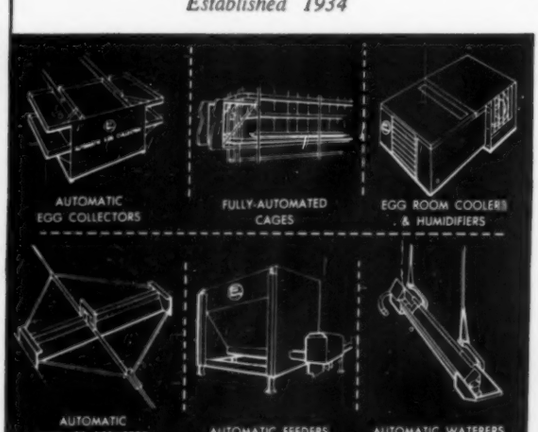

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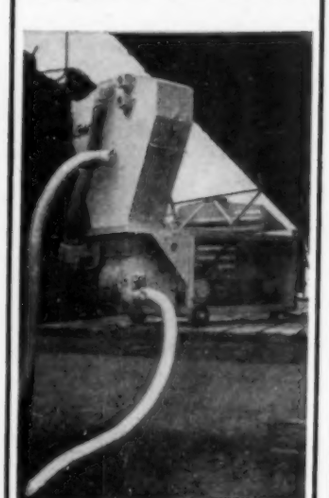

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tion when fed in range supplements for cattle.

Studies are under way to study the effect of intervals between feedings of supplemental protein during the winter season to cows maintained on native pastures upon gains and productive performance. The study includes a comparison of feeding intervals of 2, 4 and 6 days for cows which normally calve in the spring.

Creep-feeding of calves that were born in the fall months has been the subject of studies at Oklahoma for some years. Creep-feeding increases gains of calves but most of the increase is obtained by the end of the winter-feeding period. Studies are underway to study the effect of creep-feeding only during the winter period. Future studies will be concerned with creep-feed mixtures, with particular emphasis upon increasing the palatability of such mixtures.

Stilbestrol Tests

When diethylstilbestrol pellets are implanted in beef calves, which are 3 to 5 months of age, gains are increased by about 12% with a 12 mg. pellet. Subsequent feedlot performance of these animals is not affected. Adding diethylstilbestrol to the creep-feed has given variable results. Implantation of yearling steers with 12-24 mg. of diethylstilbestrol has increased summer gains by about 12% and subsequent feedlot performance is not affected.

During the past nine years, different levels of starch, dextrose, corn oil and corn have been added to wintering-type rations for beef cattle. Digestibility and nitrogen balance trials have been conducted and it was found that additional energy improved nitrogen utilization if the level of protein was high enough. High levels of corn oil reduced the digestibility of dry matter but had no effect upon protein utilization. The addition of corn oil increased the excretion of minerals. Other energy sources will be used in future trials.

In other trials with cattle, researchers are determining the nutritive value of bermuda grass, and native grasses when fertilization and other factors are varied. Thyroxine administration to range beef cattle (180 mg. sodium-L-thyroxine implanted) has increased milk production and weights of the calves. When calves were implanted with thyroxine pellets (60 or 100 mg.), gains were depressed during a 90-day test.

SWINE RESEARCH—Most of the swine nutrition projects are based upon the evaluation of various supplements to be used with the sorghum grains, which are produced locally. The sorghum grains are deficient in the essential amino acids, lysine and threonine; lysine being the first limiting amino acid. Further research has revealed that the sorghum grains are deficient in vitamins A, D, riboflavin and pantothenic acid. Future research will be conducted to determine if there are deficiencies of other essential nutrients and to evaluate other supplements to be fed with the grain sorghums.

THAYER

(Continued from page 90)

tions and a full summary of the field test results are presented in Processed Series P-391 which can be obtained by writing to the Poultry Science Department, Oklahoma State University.

New Techniques

New techniques are being developed to more precisely determine nutrient requirements which it is anticipated will make it possible to produce a pound of market turkey for 1.8 lb. of feed under commercial production conditions. Amino acid requirements are being studied utilizing a technique in which blood is drawn by heart puncture. This blood is analyzed by microbiological techniques for 18 amino acids. Changes in the amino acid level in the blood when different rations are fed are the criteria being utilized to determine the amino acid levels in the rations which will give the most efficient growth at each physiological age.

In order to utilize research dollars more efficiently and to increase the quantity of basic nutrition data which can be obtained for each research dollar spent, techniques are under development in which turkeys are to be fed individually from day-old through the 10th week of the growing period. Individual cages will be developed at a later date in which turkeys can be grown from the 10th week to market weight. The use of this technique in which turkeys are fed individually will mean that fewer turkeys will be needed and data can be collected more precisely. In order to summarize and analyze the volumes of data thus obtained, an electronic computer is to be used to calculate average body weights and feed consumption and to analyze the data statistically.

The technique of individual feeding has been applied more intensively in studies designed to determine nutritive requirements of laying hens. A windowless cage house which is temperature controlled has been developed and built at Oklahoma State. This windowless cage house contains 576 individual laying cages. Each hen is individually fed and watered and data can be collected on an individual hen basis. It is estimated that 576 hens in this windowless cage house provide data equivalent to 10,000 laying hens in floor pens.

The control of nutrient intake is a major problem in nutrition studies involving laying hens. A technique has been developed at Oklahoma State in which ground polyethylene is utilized as a volume-control ingredient in experimental layer rations. By utilizing the ground polyethylene it has been

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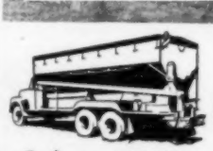

Sudenga 'BIG BOY' BULK FEED BOX

12 to 14-ton bulk feed box for 2-ton tandem trucks. 21' discharge auger — extensions available. Four equal compartments. Choice of flexible shaft or gear box drive. Hydraulic drive extra.

Sudenga Slip-in PICK-UP BULK BOX

2½ ton capacity. Here's the ideal box for feed mills and elevators for the small loads and to come to the rescue during peak seasons or during wet weather. It's a natural for large turkey and poultry operations, farms requiring day-to-day tonnage. As low as $892.50.

Sudenga COMBINATION BAG-OR-BULK BODY

Ideal for feed dealers who want to haul either bags or bulk. Do not break pellets or crumblized feeds. Fast unloading. Easy loading on the farm with 5' or 6' dia. auger in special carrier. Permits filling box evenly without scooping to the front. Removable hopper bottom. Vinyl tarp.

WRITE FOR DETAILS Sudenga INDUSTRIES, INC. Dept. F GEORGE, IOWA

possible to feed hens graded levels of protein, energy and vitamins under an ad libitum feeding regime.

In order to further extend the effectiveness of the windowless cage house, plans are under way to build a metabolism and digestibility laboratory for chickens and turkeys. In this laboratory it will be possible to modify growing turkeys and laying hens surgically and to collect urine and fecal material separately. This will make it possible to conduct nutrient balance and digestibility studies and to use other techniques which will permit measurements to be made on the efficiency with which nutrients and combinations of nutrients are utilized.

A limited application of Nutrient Intake Standards has been made in commercial egg production utilizing the data obtained in the windowless cage house. Results to date indicate that the application of Nutrient Intake Standards in ration formulation may substantially improve the efficiency with which nutrients are utilized by the laying hen. The number of pounds of feed required to produce a dozen of eggs will probably not be reduced since a specific volume-density relationship is essential for best laying performance but the efficiency with which nutrients can be utilized will be greatly increased. This concept of controlled nutrient intake is similar in principle to the restricted feeding concept now being applied by

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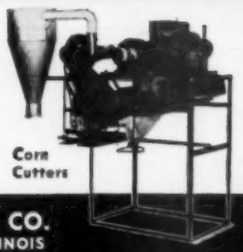

Corn Cutters

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commercial poultrymen. However, it is a more precise procedure and permits nutrient intake to be more adequately controlled.

Mineral Metabolism Study

Radioisotope techniques and mathematical principles are being utilized in a study of mineral metabolism in the laying hen. These studies involve the development of more precise measurements which can be used to determine the efficiency with which minerals are being converted into egg shell. It is hoped that these techniques when they have been perfected will permit research workers to detect and measure differences in mineral utilization long before these differences become apparent in lowered egg production or poor egg shell quality. The extensive testing of different sources of calcium and phosphorus for laying hen rations will be initiated when the necessary new techniques become available through this research study.

Census Taker: "How many bushels of corn did you raise last year?"

Backwoodsman: "Didn't bushel it—bottled it."

◆ ◆ ◆

An old man from the hill country took his first trip to a large city. Walking into one of the skyscrapers he saw a doorman standing by a special kind of door. An old woman stepped in, a light flashed red, and she was gone. A few seconds later the elevator descended, the door opened and a beautiful young lady stepped out.

"Begorra," said the old man, blinking his eyes. "I should have brought the old lady with me."

◆ ◆ ◆

Driving up to the house to deliver the family's ninth baby, the doctor almost ran over a duck.

"Is that your duck out front?" asked the doctor.

"Yep, it's ours," replied the father, "but it ain't no duck. It's a stork with its legs worn down."

◆ ◆ ◆

His friends in the mountains say that Uncle Ben, a very cautious and frugal old man, put on his new suit of clothes one day and went down to have a look at Chattanooga.

As he was looking, a red-nosed stranger approached, asking, "Will you give me a quarter for a sandwich?"

Uncle Ben gave him a good looking-over.

"Lemme see the sandwich, first," he said.

◆ ◆ ◆

Tourist: "I see you raise hogs almost exclusively around here. Do they pay better than corn and potatoes?"

Native: "Well, truth is, they don't —but hogs don't need no hoein'."

◆ ◆ ◆

A motorist and his wife traveling through the Blueridge Mountains of Tennessee stopped at a one-pump gas station before a mountaineer's cabin. After the man told the proprietor to fill the tank, his wife asked: "Is there a rest room here?"

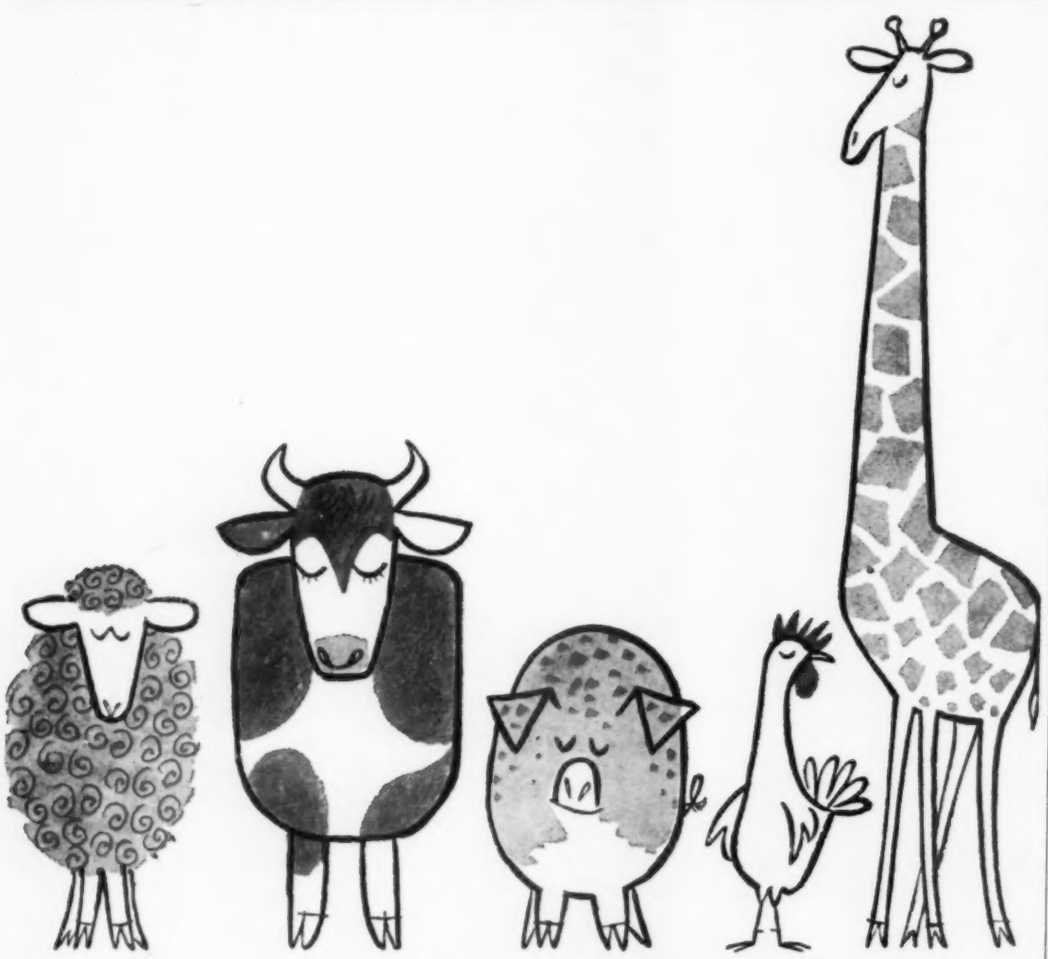
Attendant: "No ma'am, there isn't, but you'll find a mighty comfortable rocker up there on the porch."

◆ ◆ ◆

Famous rodeo performer from Wyoming visiting a Texas ranch was invited to test one of the local broncos. He hadn't been on the horse a full second before he found himself flying through the air.

"Man," he panted, "these Texas horses sure can buck."

"He didn't buck," commented a local cow hand. "That cayuse was merely hiccupping."



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(WELL, ALMOST EVERY PROBLEM!) The full line of Morton Trace-Mineralized Mixing Salts includes specially formulated salts for poultry, swine, cattle and sheep. (None for giraffes, however. Maybe next year, if the market expands . . .)

New Multi-Purpose Mixing Salt contains six specially selected trace minerals for cattle, sheep and mature hogs. Like all Morton Mixing Salt, it contains a new and improved anti-segregation agent, and its trace mineral compound is water insoluble.

New Poultry Mixing Salt is the most flexible product of its kind on the market. Containing higher levels of essential trace minerals for poultry, it can be used in varying amounts for optimum results.

New Swine Mixing Salt for growing swine contains a high level of zinc to promote maximum growth and aid in the prevention of parakeratosis.

Morton also offers Iodized Mixing Salt and Special Mixing Salt. All five Mixing Salts are backed by Morton research and quality control, and all are available anywhere in the country.

For more information, ask your Morton Representative, or write:

Morton Salt Research Laboratory, Woodstock, Illinois

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Contains ½ steamed bone meal . . . 6% phosphorus. Guaranteed that your livestock will eat it free choice.

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. . . not only salt and trace minerals, but also the needed calcium and phosphorus (6%). Guaranteed palatable.

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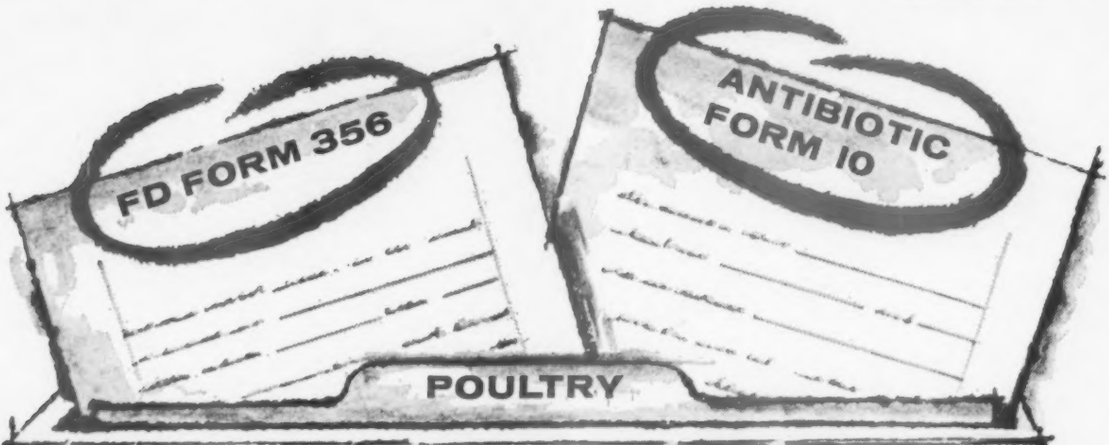

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It's wise, of course, to file your application NOW. The several new use-applications described below make AMPROL an even more attractive feed additive.

FORM 356?...

This, of course, is the form to file when a coccidiostat-medicated feed only is desired. Ever since the introduction of AMPROL, it has met with almost universal acceptance by the broiler industry. For here at last was a coccidiostat that could deliver the BIG FOUR advantages the industry expected of a coccidiostat: thorough coxy protection . . . effectiveness against mixed infections...no evidence of coccidial resistance...and top feed efficiency and weight gains. You may also file for the use of AMPROL in turkey feeds.

OR ANTIBIOTIC FORM 10?...

This is the form that's been filed by so many feed manufacturers since AMPROL was cleared for use in broiler feeds *in combination with low and high levels of most certifiable antibiotics!* These important new clearances now permit the effective prevention and treatment of such diseases as C.R.D.... without interrupting the vital program of preventing coccidiosis with AMPROL. You need only amend your present Form 10 to cover a high antibiotic level . . . or . . . you may have to file for the first time, naming the antibiotic of your choice.

Whether you use Form 356, Antibiotic Form 10, or an amendment of one of these depends on your particular situation. It's wise to give attention to filing now. If you need any further information or help in filing your applications, either see your Merck Feed Representative or write to us. Merck Chemical Division, Merck & Co., Inc., Rahway, N. J.

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MERCK

Centennial Nutrition Report from:

Texas A&M College

Poultry

By Dr. J. H. Quisenberry
Head, Department of Poultry Science

Research in the fields of poultry nutrition and avian biochemistry in the department of poultry science has the objectives of producing more meat and eggs with less feed cost and with a better feed conversion. This may be brought about, for example, through studies of protein requirements of broilers, laying hens, breeding hens, growing turkeys and breeding turkeys. In such studies it is necessary to evaluate the most economical protein concentrates available for use in feed formulations with regard to essential amino acid content and amino acid availability. It is also necessary to establish the level of protein which should be used with a particular level of energy, thus the Calorie/protein relationship.

J. H. Quisenberry

Studies conducted in this department have shown that it is wise to use a Calorie/protein ratio (based on productive energy Calories) of 42:1 for broiler starters, and 50:1 for broiler finishers. Protein levels generally in use are 24 and 22%, respectively. A great deal of research has been carried out in this department on the protein requirements for laying hens. It can be stated that an evaluation of the data reveals that the protein requirement is related to level of production, body size and temperature. The data reveal that an inbred hybrid laying hen in high production requires approximately 18 grams protein per day.

Studies with broiler type breeders have shown that it is wise to rear such birds on a restricted feeding management program through restricting the caloric intake either by the use of low calorie diets or limiting the allowance of feed per bird per day. It has been determined that the best practice is to also limit the caloric intake of the breeders after the start of egg production in a similar manner. Such procedures tend to increase egg production, maintain the hens with a lower body weight through the egg production period and decrease mortality.

Calcium and phosphorus: Results of studies conducted during the past two years show that it is wise to use a level of calcium in the range of 2.75 to 3.25% for best results with laying hens. The phosphorus requirements of laying hens have not been studied. The inorganic phosphorus level in these studies was 0.45%. All diets have been supplemented with manganese at a level of at least 50 ppm and zinc at a level ranging from 50 to 60 ppm.

Recent results have shown that it is necessary to increase the inorganic phosphorus levels of turkey prestarters and starters in order to prevent leg weakness which occurs during the period from the 14th to 18th week in the turkey growth period.

It is the opinion of the workers at this station that the phosphorus requirements of the chick and poult on a practical basis should be expressed in terms of inorganic phosphorus, particularly in the early part of the growing period. This is especially important during the first three weeks.

Data obtained during the last 12 months are in agreement with that of other stations to the effect that the calcium level used in feeds for starting and growing chickens should be in the range of 0.8 to 0.9%. Such formulas should contain at least 0.45% inorganic phosphorus, which is in agreement with the recommended allowances published by the National Research Council.

Feed additives: This station was among the first to show that antibiotics produced an increase in growth and an improvement in feed conversion in studies with chickens and tur-

(Turn to QUISENBERRY, page 102)

Beef Cattle, Sheep, Swine, Goats

By Dr. O. D. Butler
Head, Department of Animal Husbandry

Beef cattle, sheep, goat, and swine nutrition research is conducted at the main station (College Station) and at 13 of the 29 sub-stations throughout the state.

Main Station Projects

Projects at the main station and the principal investigator for each include the following:

H-1082, "Trace Minerals, B-Vitamins and Amino Acids as Supplements to Swine Rations"; Fred Hale—This project is concerned with the nutritional deficiencies of corn and sorghum grain rations supplemented with soybean and cottonseed oil meals for growing and finishing pigs. Special emphasis is being given to effectively utilizing various qualities of cottonseed meal as the sole protein concentrate.

S-1171, "Evaluating Sealed Storage of Moist Grains and Roughages for Beef Cattle"; J. K. Riggs—An evaluation of high moisture (20-30%) vs. low moisture (12-14%) sorghum grains and method of roughage storage (about 45% moisture air-tight, ensiled hay) for growing-fattening beef cattle and intensified beef production systems.

S-1314, "Rice Oil in a Cattle Fattening Ration as It Affects Gain and Meat Quality"; G. T. King.

S-1010, "Factors Affecting the Formation and the Prevention of Urinary Calculi in Ruminants"; H. R. Crookshank (USDA)—An investigation of the basic physiology and etiology of urinary calculi and practical mean or means for preventing its occurrence in the feedlot and on the range.

S-566, "Livestock Losses on Winter Wheat and Other Pastures with Special Reference to Grass Tetany"; H. R. Crookshank (USDA)—An investigation of the basic physiology and etiology of livestock losses on winter wheat and other lush pastures.

H-714, "Biochemical and Fundamental Physiological Bases of Genetically Variable Growth of Animals"; H. O. Kunkel—Primarily a breeding project, but considerable attention has been given to the relationship between rate of gain and rumen development (ruminal papillae) and compensating growth mechanisms.

S-808, "Antibiotics and Related Substances as Dietary Supplements in the Growth and Fattening of Sheep"; H. O. Kunkel.

H-1297, "Quantitative Aspects of Intrareticulorumen Carbohydrate and Volatile Fatty Acid Metabolism. 1. Methods"; W. C. Ellis—A project concerned with the development of appropriate methods for (a) determining ryegrass carbohydrates by direct colorimetric means and (b) rendering quantitatively the dynamics of intrareticuloruminal processes involved in their digestion.

Projects at Sub-Stations

Research conducted at the substations and field laboratories are coordinated by J. H. Jones and J. K. Riggs. Current projects at these loca-

(Turn to BUTLER, page 104)

Chemical Evaluation Of Protein Quality

By Dr. Carl M. Lyman
Head, Department of Biochemistry and Nutrition

The nutritional value of the proteins in foodstuffs depends not only on the distribution of amino acids in the protein, but also on the way in which the materials are prepared. Heating to high temperatures causes the amino acid lysine to react in various ways which block the action of the digestive enzymes so that the individual amino acids are not all freed to be taken up into the blood stream. The net result is that only part of the protein can be utilized by the animal.

The epsilon amino group of lysine is known to combine with carbohydrates, with the amino acids glutamic and aspartic acid, and in the case of cottonseed meal with gossypol.

Reliable chemical methods are now available to determine to what extent the lysine has been tied up with some of these substances. These methods are now being extensively used to evaluate processing damage in protein concentrates.

Although excellent analytical results are obtained with materials such as oil seed meals and fish flours, the carbohydrates in grains interfere with the chemical reaction and erroneous results are likely to be obtained. Work is in progress to improve the analytical procedures so that these limitations will no longer apply.

Recent tests in our laboratory have shown that when lysine in protein reacts with carbohydrates the effect on nutritional value is not quantitatively the same as when the lysine reacts with other substances. One of the next steps in this research is to develop analytical procedures which will distinguish between the various ways by which the amino group of lysine is blocked.

Dairy

By Drs. I. W. Rupel and M. A. Brown
Department of Dairy Science

Dairy cattle nutrition research in progress at Texas A&M is done in three general areas. These are: (1) Development of milk substitutes in calf feeding, (2) preservation and storage of forage crops and (3) evaluation of feeds for producing dairy cows.

Development of milk substitutes in calf feeding: Mixtures of ingredients readily stocked by the average feed dealer, that can be fed as a warm gruel to replace all of the whole milk in the diet of very young dairy calves, have been studied. Ingredients in early replacers included non-fat milk solids, dried whey, a vitamin supplement and an antibiotic agent. Rates of gain made by calves during their first 30 to 60 days on this milk replacer were impressive. Replacer costs were reasonable, averaging less than 12¢ per calf per day.

I. W. Rupel

M. A. Brown

The addition to later replacers of a fat source, Marcol B-75 (a product of methylation of the "foots" from cottonseed oil refinement), resulted in slightly faster rates of gain, sleeker hair coats, and an absence of non-

(Turn to page 102)

DAIRY FEEDING BARN—This photo shows interior of dairy feeding barn at Texas A&M College. In the foreground are the experimental feeding mangers where individually weighed daily rations, stored in covered metal cans, are fed. In the background are mangers where the general milking herd animals are fed concentrates before they go into the milking parlor. Animals not on experimental trials are fed forages in a shelter barn under a loose housing arrangement.

Why are more and more feed packers using Union-Camp I&C bagging equipment?

Over 1000 Union-Camp I&C installations have been made in the last six years. Here are 8 reasons behind their astonishing popularity.

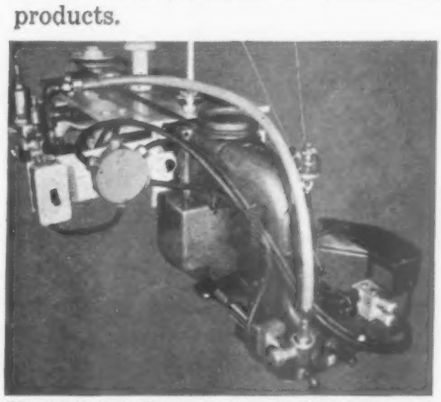
1. Reduced Packaging Costs. I&C's pay for themselves. Their fast, *automatic* operation reduces packaging and labor costs, increases profitability. Dozens of repeat orders attest to their efficiency and economy.

2. 20-a-Minute—and More. The Union-Camp I&C Bagger was the first machine to introduce high-speed filling of open-mouth multiwall bags. Speeds well in excess of 20 bags per minute can be sustained, depending on the flow of the product.

I&C V-Type Sewing Conveyor. Fixed chain brackets eliminate need for rollers. This means no freeze-ups, fewer breakdowns.

3. Outstanding Flexibility. With the versatile I&C, you can make weight changes from 25 to 200 lbs.—with just a turn of a scale dial knob! No bag clamp is necessary.

4. Accurate. The I&C *automatically* pre-weighs the net amount of material before it is dumped in the bag. At speeds of 20 bags a minute and more, weight variation is within *plus or minus 2 ounces* on 100 lb. packages of uniform granular or pelletized products.



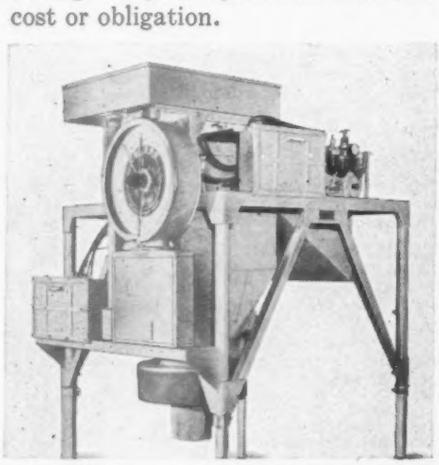
The I&C Acto-Cutter automatically starts and stops sewing action and cuts threads between bags. An outstanding time and labor saver.

5. Low Maintenance. Simplicity of design is a major feature of I&C equipment. Another is sturdy construction. Many packers report low maintenance cost a key factor in their selection and repurchase of I&C bagging equipment.

6. Cuts Production Time—Speeds Service. With the I&C you can bag and ship required tonnages faster. There is usually little or no downtime. Thus you speed customer service and delivery, reduce costly overtime.

7. Labor-Saving Accessories. There is a wide range of machine models plus many cost-cutting auxiliaries. These include sewing machine lubrication systems, dual head sewing stand, automatic actuators and thread chain cutters—everything you need to streamline your multiwall bagging operation.

8. Valuable Survey Service. Union-Camp package machinery specialists make comprehensive surveys of your plant. They make up exact machinery and installation specifications and layouts. They train operating personnel, help determine the actual savings for your operation. All at no cost or obligation.



Newest I&C Bagger—the UB-101. Machine's features include dial scale which provides for instantaneous weight changeovers from 25 to 200 lbs. with a turn of a knob.

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HOW **Lemanco** CAN GIVE YOU

BULK STORAGE QUICKLY

The revolution sweeping the country in the feeding industry is affecting feed mills all over the nation, both large and small. Many problems have arisen; among them the need for additional bulk storage, the need of saving labor, and the need to get more volume through the mill at lower cost per ton.

The square bins illustrated are some of the ways you can add extra storage in your plant. These bins are designed complete with rotary gates and supports for a weigh buggy operation. The minimum 60° slope built into most of these bins will handle practically all hard-to-flow materials. They are also available without legs, designed to set on your structural at any height. The No. 7682 or the No. 6682 can be mounted as bulk load-out bins either with a shed roof, or as an outside installation, since these hoppers can be made for either inside or outside use. Where one of the popular pneumatic units is being used, an air top is available. Outside weatherproof tops can also be supplied.

LEMANCO bins are prefabricated. The hoppers are constructed of 14-gauge steel, welded into a complete unit, the sides 16-gauge galvanized steel reinforced and gang punched in holding jigs to assure proper matching of all holes. This method of punching holes plus close control of tolerance in the fabrication of LEMANCO hoppers, legs and bracing, pays dividends in the ease of assembly by your own labor or favorite millwright.

LEMANCO storage bins are designed to enable you, the feed mixer or feed manufacturer, to install with small labor cost bins of proper pitch and suitable capacity. The use of common wall construction in grouping two or more hoppers together reduces labor and material costs.

You can save labor in operation by using LEMANCO bins with a LEMANCO weigh buggy or by filling a weigh hopper with an auger, thus getting ingredients into mixer in less time with less labor. You can, also, use these same type bins as finished feed storage, either mounted on structural as an overhead bulk load-out or, as many are doing, auger direct from the finished feed tank into the truck.

You can order these bins with full assurance that they are quality built and can be easily erected by you or your contractor. If in measuring your space you find the particular bin you need is too high, the sides can be adjusted on special order to fit your requirements. Where augers are attached, the bins can be lowered allowing you to add additional height for greater capacity.

The LEMANCO system is so flexible in application that it is impossible to detail every possibility. If you have difficulty in fitting one of these bin arrangements in your mill space or storage area, a phone call to our engineering department may assist you.

Write or telephone today for price list. Shipment can be made promptly.

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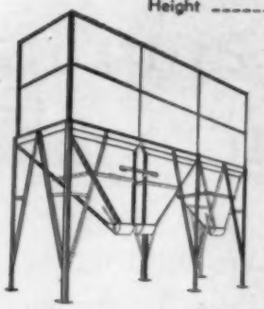
GADSDEN, ALABAMA.

6682

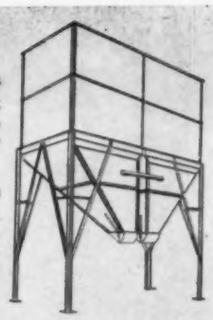
IB 6682-42
Capacity ..... 4.06 tons
Shipping wt. ..... 1547 lbs.
Width ..... 6'-4"
Depth ..... 6'-4"
Height ..... 14'-10½"

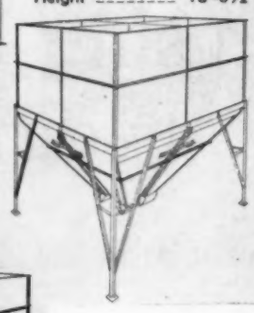
IB 6682-84
Capacity ..... 6.06 tons
Shipping wt. ..... 1863 lbs.
Width ..... 6'-4"
Depth ..... 6'-4"
Height ..... 18'-0½"



IB 12682-42
Capacity ..... 8.12 tons
Shipping wt. ..... 2564 lbs.
Width ..... 12'-0"
Depth ..... 6'-4"
Height ..... 14'-10½"

IB 12682-84
Capacity ..... 12.12 tons
Shipping wt. ..... 3123 lbs.
Width ..... 12'-0"
Depth ..... 6'-4"
Height ..... 18'-0½"



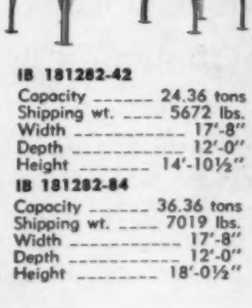


IB 18682-42
Capacity ..... 12.18 tons
Shipping wt. ..... 2461 lbs.
Width ..... 17'-8"
Depth ..... 6'-4"
Height ..... 14'-10½"

IB 18682-84
Capacity ..... 18.18 tons
Shipping wt. ..... 4263 lbs.
Width ..... 17'-8"
Depth ..... 6'-4"
Height ..... 18'-0½"

IB 121282-42
Capacity ..... 16.24 tons
Shipping wt. ..... 3840 lbs.
Width ..... 12'-0"
Depth ..... 12'-0"
Height ..... 14'-10½"

IB 121282-84
Capacity ..... 24.24 tons
Shipping wt. ..... 4790 lbs.
Width ..... 12'-0"
Depth ..... 12'-0"
Height ..... 18'-0½"



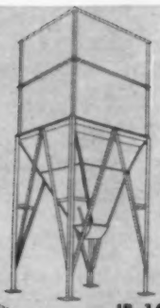
IB 181282-42
Capacity ..... 24.36 tons
Shipping wt. ..... 5672 lbs.
Width ..... 17'-8"
Depth ..... 12'-0"
Height ..... 14'-10½"

IB 181282-84
Capacity ..... 36.36 tons
Shipping wt. ..... 7019 lbs.
Width ..... 17'-8"
Depth ..... 12'-0"
Height ..... 18'-0½"

The No. 6682 hopper has a minimum pitch of 60° and is additionally versatile in that it has a side draw or a corner draw base. This makes possible a cluster of bins utilizing either draw to best suit your mill conditions.

ADD BULK STORAGE TO YOUR FEED MILL WITH Lemanco QUALITY PREFABRICATED STEEL BINS

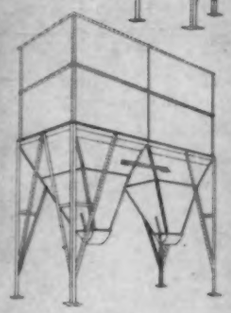
7682



IB 7682-48
Capacity ..... 4.92 tons
Shipping wt. ..... 1608 lbs.
Width ..... 7'-4"
Depth ..... 6'-4"
Height ..... 15'-4½"

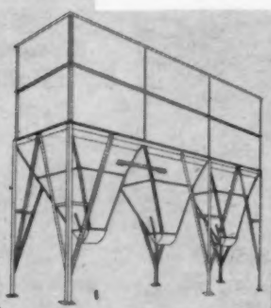
IB 7682-96
Capacity ..... 7.65 tons
Shipping wt. ..... 1878 lbs.
Width ..... 7'-4"
Depth ..... 6'-4"
Height ..... 19'-0½"

The No. 7682 hopper with its minimum 60° pitch and side draw is extremely popular due to its larger capacity. This hopper can be joined with the No. 6682 hopper under certain conditions.



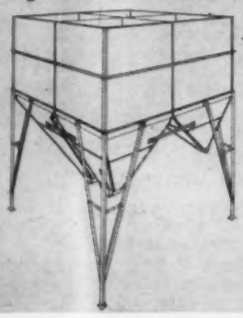
IB 14682-48
Capacity ..... 9.84 tons
Shipping wt. ..... 2961 lbs.
Width ..... 14'-0"
Depth ..... 6'-4"
Height ..... 15'-4½"

IB 14682-96
Capacity ..... 15.3 tons
Shipping wt. ..... 3605 lbs.
Width ..... 14'-0"
Depth ..... 6'-4"
Height ..... 19'-0½"



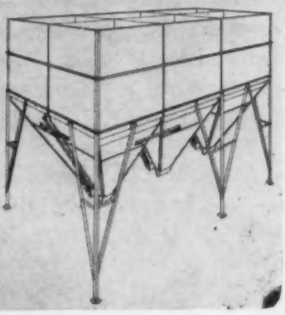
IB 21682-48
Capacity ..... 14.76 tons
Shipping wt. ..... 3028 lbs.
Width ..... 20'-8"
Depth ..... 6'-4"
Height ..... 15'-4½"

IB 21682-96
Capacity ..... 22.95 tons
Shipping wt. ..... 4096 lbs.
Width ..... 20'-8"
Depth ..... 6'-4"
Height ..... 19'-0½"



IB 141282-48
Capacity ..... 19.68 tons
Shipping wt. ..... 3871 lbs.
Width ..... 14'-0"
Depth ..... 12'-0"
Height ..... 15'-4½"

IB 141282-96
Capacity ..... 30.6 tons
Shipping wt. ..... 5026 lbs.
Width ..... 14'-0"
Depth ..... 12'-0"
Height ..... 19'-0½"



IB 211282-48
Capacity ..... 29.52 tons
Shipping wt. ..... 5724 lbs.
Width ..... 20'-8"
Depth ..... 12'-0"
Height ..... 15'-4½"

IB 211282-96
Capacity ..... 45.9 tons
Shipping wt. ..... 7390 lbs.
Width ..... 20'-8"
Depth ..... 12'-0"
Height ..... 19'-0½"

The rotary gate design is very popular when weigh buggies are used since it is easy to dribble feed with this gate. Rack and pinion gates are also available for any of these bins.

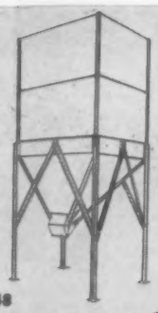
•

* The bin height shown on both pages includes 42-inch clearance under rotary gate.

5554

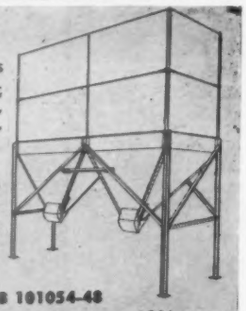
IB 5554-48
Capacity ..... 3¾ tons
Shipping wt. ..... 1060 lbs.
Width ..... 5'-3"
Depth ..... 5'-3"
*Height ..... 12'-10"

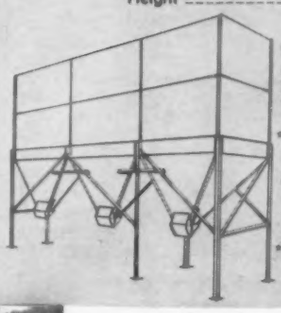
IB 5554-96
Capacity ..... 5 tons
Shipping wt. ..... 1200 lbs.
Width ..... 5'-3"
Depth ..... 5'-3"
*Height ..... 16'-6"



IB 10554-48
Capacity ..... 6¾ tons
Shipping wt. ..... 1850 lbs.
Width ..... 10'-0"
Depth ..... 5'-3"
*Height ..... 12'-10"

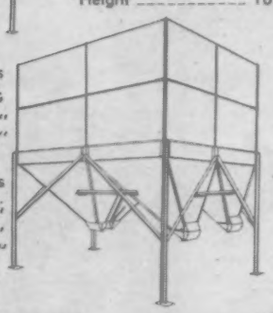
IB 10554-96
Capacity ..... 10 tons
Shipping wt. ..... 2000 lbs.
Width ..... 10'-0"
Depth ..... 5'-3"
*Height ..... 16'-6"





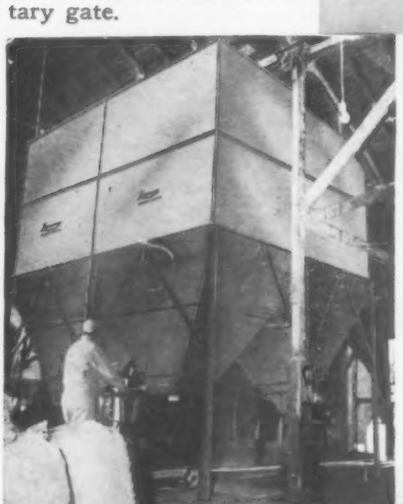
IB 15554-48
Capacity ..... 10 tons
Shipping wt. ..... 2300 lbs.
Width ..... 14'-9"
Depth ..... 5'-3"
*Height ..... 12'-10"

IB 15554-96
Capacity ..... 15 tons
Shipping wt. ..... 2800 lbs.
Width ..... 14'-9"
Depth ..... 5'-3"
*Height ..... 16'-6"



IB 101054-48
Capacity ..... 13½ tons
Shipping wt. ..... 2800 lbs.
Width ..... 10'-0"
Depth ..... 10'-0"
*Height ..... 12'-10"

IB 101054-96
Capacity ..... 20 tons
Shipping wt. ..... 3200 lbs.
Width ..... 10'-0"
Depth ..... 10'-0"
*Height ..... 16'-6"



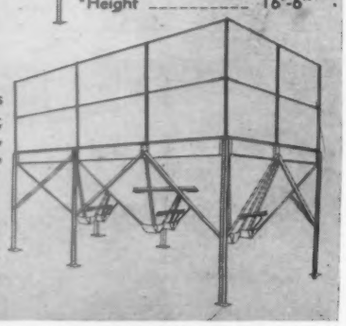
These LEMANCO bins, with their common wall construction, and either one or two tiers of sides, can fit into most any feed mill to give safe, economical bulk storage of feed and ingredients. Their open top permits ease of checking contents and filling to capacity.

The various LEMANCO bin sizes make it possible to fit additional bulk storage into your mill quickly, easily, and economically, using less floor space.

Mobile mill operators are finding additional use for their equipment by using LEMANCO storage bins with a portable auger.

IB 151054-48
Capacity ..... 20¼ tons
Shipping wt. ..... 3750 lbs.
Width ..... 14'-9"
Depth ..... 10'-0"
*Height ..... 12'-10"

IB 151054-96
Capacity ..... 30 tons
Shipping wt. ..... 4400 lbs.
Width ..... 14'-9"
Depth ..... 10'-0"
*Height ..... 16'-6"



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GADSDEN, ALABAMA

These bins are especially designed for use with weigh buggies and are adaptable where several hoppers are needed in limited space.

The No. 5554 hopper has a minimum pitch of 45° in the back. The other three sides are 60° or more. As the gate on this bin is manually operated, bridging is a minor problem. Hoppers are all side draw.

The No. 5564 hopper is available as either a side or corner draw hopper. It has a minimum pitch of 60° on two sides and the other two are practically vertical. This hopper can be incorporated in a cluster with the No. 5554 where it is advantageous to do so, keeping in mind that the No. 5564 hopper is approximately 10" lower than the No. 5554. The 60° pitch and the corner draw practically insure flow of any type ingredient.

•

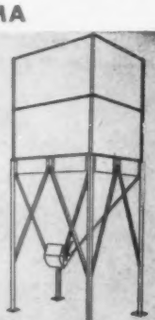
The LEMANCO weigh buggy comes in two sizes: Model 890, capacity 890 lbs. @ 40 lbs. per cubic foot and Model 1280, capacity 1280 lbs. @ 40 lbs. per cubic foot. The scale capacity on each is 1300 lbs. The low scale post permits the LEMANCO weigh buggy to be pushed under a cluster of bins to the second or third row of hoppers.

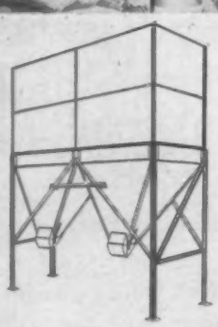
Write for prices.

5564

IB 5564-48
Capacity ..... 3¾ tons
Shipping wt. ..... 1100 lbs.
Width ..... 5'-3"
Depth ..... 5'-3"
*Height ..... 13'-8"

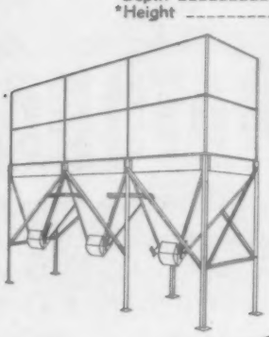
IB 5564-96
Capacity ..... 5 tons
Shipping wt. ..... 1250lbs.
Width ..... 5'-3"
Depth ..... 5'-3"
*Height ..... 17'-4"





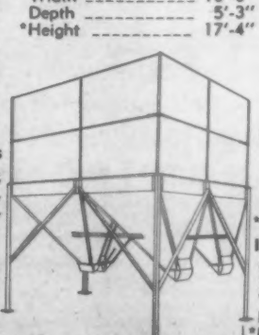
IB 10564-48
Capacity ..... 6¾ tons
Shipping wt. ..... 1950 lbs.
Width ..... 10'-0"
Depth ..... 5'-3"
*Height ..... 13'-8"

IB 10564-96
Capacity ..... 10 tons
Shipping wt. ..... 2100 lbs.
Width ..... 10'-0"
Depth ..... 5'-3"
*Height ..... 17'-4"



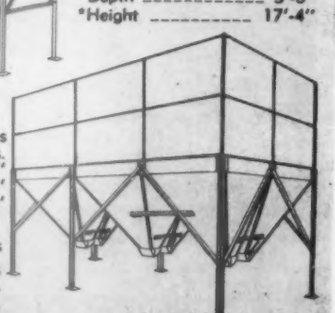
IB 15564-48
Capacity ..... 10 tons
Shipping wt. ..... 2300 lbs.
Width ..... 14'-9"
Depth ..... 5'-3"
*Height ..... 13'-8"

IB 15564-96
Capacity ..... 15 tons
Shipping wt. ..... 2800 lbs.
Width ..... 14'-9"
Depth ..... 5'-3"
*Height ..... 17'-4"



IB 101064-48
Capacity ..... 13½ tons
Shipping wt. ..... 3200 lbs.
Width ..... 10'-0"
Depth ..... 10'-0"
*Height ..... 13'-8"

IB 101064-96
Capacity ..... 20 tons
Shipping wt. ..... 3400 lbs.
Width ..... 10'-0"
Depth ..... 10'-0"
*Height ..... 17'-4"



IB 151064-48
Capacity ..... 20¼ tons
Shipping wt. ..... 3950 lbs.
Width ..... 14'-9"
Depth ..... 10'-0"
*Height ..... 13'-8"

IB 151064-96
Capacity ..... 30 tons
Shipping wt. ..... 4600 lbs.
Width ..... 14'-9"
Depth ..... 10'-0"
*Height ..... 17'-4"

VISITORS FROM ABROAD—Representative of the foreign interest in the 1961 Feed Production School conducted in Kansas City Sept. 11-14 is this exchange of trade talk between two visitors from abroad—D. C. Hailey (left), Spillers, Ltd., London, England, feed manufacturing firm, and Zev Katz (second from left), Israel Association of Field Crop Growers, Tel Aviv, Israel —and two Oklahoma feed men—C. T. Hardeman (second from right), Magic Mills, Inc., McAlester, Okla., and James A. Rosso, McAlester (Okla.) Oil Mill Co.

infectious scours, among calves properly managed on these regimes. Costs per calf were not increased by the addition of the fat source to the replacer.

The effects of altering the ratios of, or making substitutions for, the basic components of the replacer are being studied. Low-fat fish meals and cerelose are being substituted for portions of the non-fat milk solids and dried whey. Substitutions of homogenized lard, butterfat, or methyl esters of tallow fatty acids for Marcol B-75 are being studied.

Preservation and storage of forage crops: Present work tends to indicate that the disadvantages of lower yield of dry matter and seepage losses for immature forages may be offset by superior palatability, digestibility and milk yield per ton of dry matter of forage crops harvested at the earlier stages of maturity.

The feeding value of a forage may be affected by the conditions under which it has been stored. Data concerning the relative values of forage after storage in conventional or gastight upright silos, trenches, or bunker or "slab" type silos are being collected.

The effects of silage preservatives such as sodium metabisulphite on the storage properties of locally grown forages are being investigated.

Practical operations for the mechanical harvesting of high tonnage forage sorghums are being sought. Studies of the relative efficiencies of various feeding methods, including self-feeding, are under way.

Evaluation of feeds for dairy cattle in production: Particular effort in nutrition research at this station is directed toward the development of practical rations for the dairy cattle which will maintain milk flow and normal milk composition under conditions of hot weather, prevailing in Texas during the long summer season.

Holstein and Jersey cows produced slightly higher daily yields of milk when fed a high energy ration containing 63% less fiber and 14% less dry matter than a standard more bulky ration. Alfalfa hay, Atlas sorghum silage, wheat bran, cottonseed meal, steamed bone meal and salt were common to both rations. The low fiber or high energy ration included corn meal and ground milo with somewhat restricted amounts of forages. In the high fiber ration the heavy grains were replaced with ground ear corn and ground oats, while the forages were not restricted.

Additions of a supplemental fat source to the low fiber ration increased the energy level in the diet. Both Holsteins and Jerseys responded to the high energy ration with significantly greater milk yields during hot weather. Differences in production response were not significant when peak daytime temperatures were below 90°-95° F.

Milk composition was affected by the ration during both hot and cool weather. During a 12-week mild weather feeding trial the fat levels in milk from Holstein and Jersey cattle were increased by feeding a high energy ration. However, with Holstein cattle, a high fiber, bulky ration appeared to more adequately support production of solids-not-fat and lactose than did the less bulky rations.

Double-reversal feeding trials are employed to study comparative nutritional values of various roughages and concentrates in the rations of milking cows. Among the roughages studied are coastal bermuda grass, sudan grass, oats and various sorghum varieties. Concentrates under study include citrus pulp, rice bran and others.

QUISENBERRY

(Continued from page 98)

keys. The antibiotics used in these investigations have included Aureomycin, Terramycin, bacitracin, streptomycin and penicillin. Recent investigations have shown that the broad spectrum antibiotic level of the blood can be potentiated with diets low in calcium (0.2-0.4%), with diets containing ½% terephthalic acid, and by using soft phosphate as one of the sources of phosphorus in the feed formulas.

It has been shown during the past two years that feed conversion of

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broiler feeds could be improved by adding certain flavors to the feed.

Proteolytic enzymes (proteases) have shown some promise when added to the feed formula of broilers. Research in this field is continuing.

Pigmentation: Levels of alfalfa ranging from 10 to 25% have been used in feeds for laying hens to produce egg yolks of any desired NEPA number ranging from 2 to more than 6. The highest level of dehydrated alfalfa meal used in these studies has not been found to be detrimental to egg production though a slight increase in the requirement of feed per dozen eggs has been observed with the higher levels. A number of artificial pigmenting agents are at present in the experimental stage of broilers or laying hens. From the work at this station it is not necessary to have a high level of xanthophylls in the feed formulas of broilers for more than 2 to 3 weeks before marketing the broilers.

Unidentified Growth Factors: Designations which have been assigned to the unidentified growth factor activities are "fish factor," the "whey factor" and the "alfalfa factor." There is certainly an overlapping of activity in various ingredients in attempting to differentiate the assigned designations. It is possible that the fish factor and the whey factor may finally be identified as one and the same. Considerable progress has been made in this laboratory toward the identification of one of the factors and such is almost complete.

There is little evidence to illustrate the necessity for unidentified factor activity in feed formulas for laying hens and even for breeding chicken hens. Recent reports from this laboratory explain such observations to the extent that yellow corn and soybean oil meal are the most potent feed ingredient sources of unidentified substances for egg production, embryonic growth and hatchability.

Data from this laboratory clearly illustrates the necessity for including 5% dehydrated alfalfa meal along with an adequate supply of the fish factor in breeder feed formulas for turkeys. The latter can be supplied by fish meal and fish solubles or combination of these two ingredients.

Relation of protein requirement to breed: It has been reported that, in addition to body weight, rate of lay and environmental temperature, the dietary protein level for optimum performance may also be influenced by breeding. This is under study currently using four popular commercial strains of layers.

Protein requirements as related to age: Work on protein requirements for layers at the Texas Station during the past three years has indicated that for the lowest feed cost per unit of eggs the dietary protein level may be lowered as the egg production period advances. The protein level may be lowered without harmful effects as the age progresses. Higher protein levels seem critical for reaching the maximum rate of lay and attaining large egg size quickly.

Amino acid supplementation of low protein laying diets: Supplementation of low protein laying diets with lysine and methionine has offered some promise as a means of lowering the feed cost per pound of eggs and for saving substantial amounts of protein.

Comparison of milo and corn in laying hen diets: Since grain sorghums are usually considerably cheaper than corn in the Southwest, poultrymen in this area use large quantities of them in laying diets. The question frequently asked is: "Can all corn be replaced with milo without adversely affecting production and feed efficiency?" Comparisons of diets varying from all corn and no milo to no corn and all milo as the cereal grain portion of the diets are under way. In addition to performance traits, yolk colors are being measured.

Combination antibiotic and anthelmintic: One of the newer antibiotics, Hygromycin B, has offered some promise as an anthelmintic for swine. It has also been used as a combination anthelmintic and antibiotic for chickens at the Texas station. Not only has it offered promise as an internal parasite reducer in growing pullets but when fed during both the growing and the laying periods has resulted in a significant increase in egg production.

Relation of protein requirement to breed: It has been reported that, in addition to body weight, rate of lay and environmental temperature, the dietary protein level for optimum performance may also be influenced by breeding. This is under study currently using four popular commercial strains of layers.

BUTLER

(Continued from page 98)

tions include the following by station:

El Paso Valley Experiment Station, Ysleta, Texas:

S-1036, "Fattening Steers in the El Paso Valley"; P. J. Lyerly—Emphasis has been placed on the value of pelleting combinations, cotton byproduct utilization, and bloat prevention in sorghum grain fattening steer rations.

S-1036, "Evaluation of Gin Trash as a Roughage in Fattening Rations for Beef Cattle"; D. S. Logan.

Sub-Station No. 7, Spur, Texas:

S-1210, "The Effect of Three Levels of Energy Intake on Beef Cows and Their Production of Feeder Calves"; P. T. Marion—Criteria being studied in dry lot and under range conditions include calf crop, weaning weight and productive life of cow.

S-1907, "Production and Marketing of Beef in the Rolling Plains"; P. T. Marion—Steer fattening trials have involved treatments with diethylstilbestrol and other hormone-like compounds, tapazole, lysine, antibiotics, and supplemental Vitamin A following various levels of winter maintenance and summer grazing practices.

Sub-Station No. 9, Balmorhea, Texas:

S-1214, "The Influence of Frequency of Feeding Protein Supplement Upon Development and Production of Range Beef Females"; A. A. Melton—The effect of daily, every other day and twice weekly feeding of cottonseed cake starting with first calf heifers is being followed.

S-1212, "Performance of Hereford Cattle Implanted with Diethylstilbestrol During Suckling, Grazing and Fattening Period"; A. A. Melton—Performance of animals implanted during none, one or all three periods is being followed.

Sub-Station No. 20, Stephenville, Texas:

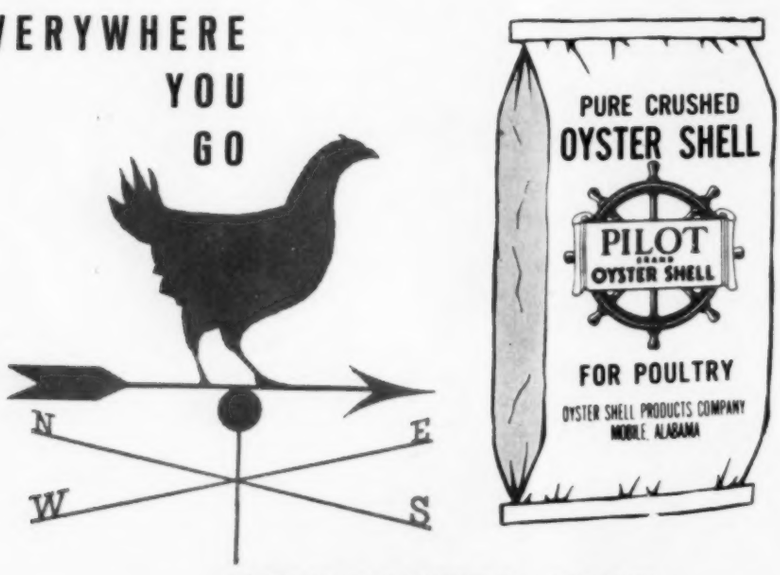
"Peanut Hulls as Feed for Cattle"; B. C. Langley.

Sub-Station No. 23, McGregor, Texas:

Investigations concerning the nutrition of the Angora doe and weanling kid are being initiated by M. J. Shelton.

Other Investigations

In addition to the above listed stations, various other stations have projects concerned with the nutritive value of supplemental and permanent pastures in stocker and farm steer operations. Also, the nutritive value of pastures produced under intensified fertilization and irrigation is being studied in the higher rainfall areas of east and southeast Texas.



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Coast-to-coast PILOT BRAND is a best-seller every month in the year. That's because this ideal eggshell material is tried, tested, proved. It definitely helps poultrymen get top production of stronger shelled eggs—the kind that bring highest prices in the market.

This universal demand for PILOT BRAND means that you can always count on steady sales, fast turnovers, good profits. And we help to keep customers coming your way with consistent advertising in leading farm and poultry publications and on more than 70 radio stations.

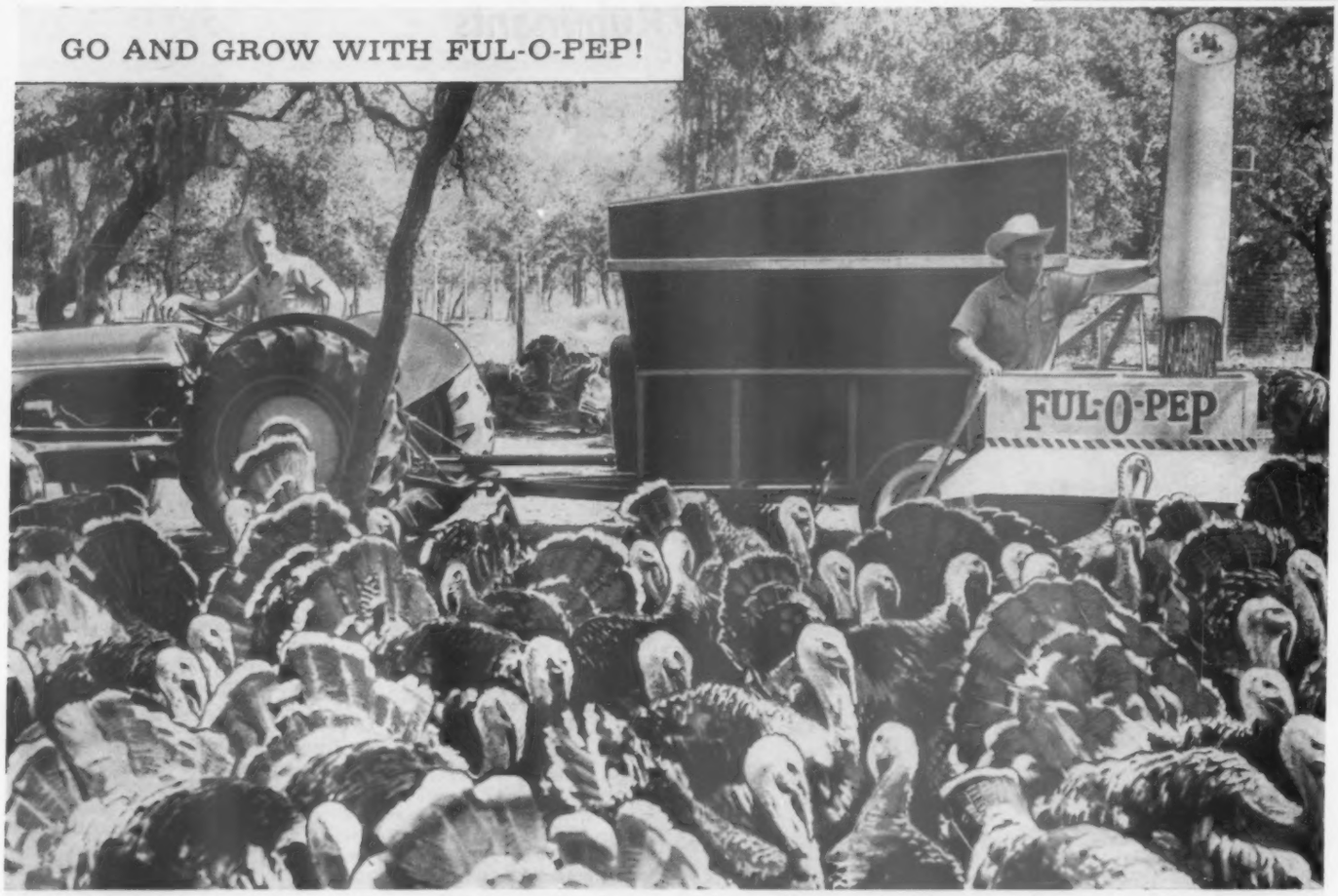
It pays BIG to stock, display, promote PILOT BRAND Oyster Shell —the largest selling eggshell material in the world.

PILOT BRAND OYSTER SHELL FOR POULTRY

Oyster Shell Products Company
Subsidiary of Southern Industries Corporation
Mobile, Alabama

Buy and Sell through WANT ADS -in- FEEDSTUFFS

GO AND GROW WITH FUL-O-PEP!



"Reputation of Ful-O-Pep for top conversions and top performance is a definite sales asset," said Frank Petras. "With Ful-O-Pep's record for efficiency, we found it fairly easy to line up good growers to put on contract." Above, Anton Krametbauer, one of the growers, unloads bulk feed into hoppers on range. John Michalec, service manager for Petras, gives him an assist on the tractor, while checking over Mr. Krametbauer's flock of Broad-Breasted Bronze.

"You can build on Ful-O-Pep's top feeding efficiency!"

—says Frank Petras, Petras Turkey Farm, Moulton, Tex.

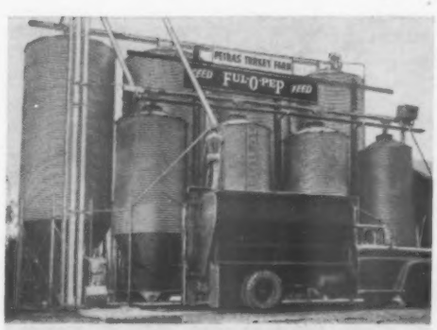
"Higher feeding efficiency is the big goal of poultry and livestock feeders today," says Frank Petras, of Petras Turkey Farm, Moulton, Texas, "because a few extra pounds gain per ton of feed can make a mighty big difference in your profit margins.

"We're located in a concentrated turkey feeding area, and our feeders are convinced of the high efficiency of Ful-O-Pep," Mr. Petras continued. "I tested it on 8,000 birds . . . and now all of my turkeys are raised on Ful-O-Pep feed 100%!

"Top feeding efficiency is a basic requirement for sound growth in the feed business," Mr. Petras said. "It's something you can build on. And we've found you can depend on Ful-O-Pep Concentrates for mixing highly efficient feeds."

GO AND GROW WITH FUL-O-PEP! *Get details of Ful-O-Pep's sound growth program. Write: Feed Sales Manager, The Quaker Oats Company, Merchandise Mart, Chicago 54, Ill.*

Frank Petras, of Petras Turkey Farm, Moulton, Texas, supplied feed for 112,000 birds this year—on his own farm, and on contract. "It's a sizeable investment," Mr. Petras said, "and we depend on Ful-O-Pep efficiency to help protect it."



This bank of bulk tanks has a holding capacity of 140 tons of Ful-O-Pep Concentrates, and 48 tons of grain. Six bulk bins inside of houses hold 4 tons of mixed feed each . . . and there are five 10-ton bulk tanks on growers' farms.

Grinding and mixing equipment consists of a 1½-ton mixer, and a 9-tons-per-hour crimper. All feed is mixed with Ful-O-Pep Concentrates, except for Ful-O-Pep Turkey Pre-Starter used. Above, Don Michalec pushes the button on a finishing ration.

FUL-O-PEP

MADE BY THE QUAKER OATS COMPANY

Centennial Nutrition Report from:

University of Missouri

TURKEYS ON MILO RANGE—University of Missouri photo shows Broad Breasted Bronze turkeys on milo range which has been stripped of leaves and grain heads by the grazing birds.

Turkeys

By Dr. Harold V. Biellier
Department of Poultry Husbandry

Objectives of present turkey nutrition studies at the Missouri Research Station are the formulation and testing of feeding practices for growing turkeys and testing the value of pasture and forage crops for supplementing turkey rations. Due to the lack of turkey research facilities in the past at the University of Missouri there exists a shortage of acceptable feed formulas to be recommended by extension service personnel. Turkey starter, grower and finishing rations have been formulated and are being tested under Missouri conditions before being made available to the turkey growers of the state. Many innovations in feeding practices remain untested for use by Missouri turkey growers although they have shown promise in other areas of the U.S.

Mostly on Range

In addition to the usual starter, grower and all-mash growing rations, several mash concentrates have been developed for use in feeding birds in confinement and on range. Most of the market turkeys reared in Missouri are reared on range. However, in the past the lack of satisfactory feeding programs and proper range management has limited the returns derived from pasture and forage crops.

The proper use of range grown pasture and grain can mean a saving of over a million dollars annually to turkey growers in Missouri alone. The cash cost of feed constitutes the largest cost of growing turkeys. Therefore, there is a great potential saving that can be made in the cost of feed by deriving the maximum benefit from range grown forage which can be supplied at a relatively low cost.

Use of Standing Milo

The use of standing milo, a grain sorghum, as a forage crop has shown considerable reduction in cost of feed required to produce market turkeys. Broad Breasted Bronze poults reared on milo range from 16 to 24 weeks of age were hand-fed 28% protein grower pellets on a restricted program calculated to provide minimum protein and vitamin requirements. Milo ranged females showed a saving of 8.4¢ for feed cost per pound of gain during the eight-week period. The males required only 1.55 lb. of mash per pound of gain and showed a saving of 7.4¢ for feed cost per pound of gain. Males carried on milo range from 24 to 27 weeks of age produced a pound of gain at a mash feed cost of 5.7¢.

In another test with males and females ranged together on milo range from 14 to 24 weeks of age, comparison of free choice and restricted feeding of grower pellets was carried out. A saving of 2.38 lb. of feed or 9.3¢ per pound of gain was demonstrated by restricting the pelleted concentrate.

Systems of feeding designed to produce efficient gains and utilize greater amounts of grains produced on range will be tested on growing turkey poults in future studies conducted at the Missouri turkey research farm.

• • •

Nutrition-Related Chemistry

By Dr. G. B. Garner
Agricultural Chemistry Department

Objectives of a five-year research program related to animal nutrition in the agricultural chemistry department of the University of Missouri include the following:

Forage Poisoning Caused by Drouth; G. B. Garner, R. A. Bloomfield, M. E. Muhrer—A. To assay Missouri forages for protein, fiber and moisture in a state wide testing and sample collection program.

B. To assay for physiologically active constituents common to most plant species.

C. To assay for specific physiologically active compounds in a single plant species.

D. To develop suitable analytical techniques for evaluation of forage quality.

E. To study the biochemical and

(Turn to GARNER, page 111)

Ruminants

By Dr. W. H. Pfander
Department of Animal Husbandry

Experiments are being conducted in the University of Missouri department of animal husbandry to find out why stilbestrol increases the gains and feed efficiency of fattening steers and lambs. This is important because it might give us some clues which would increase gains and efficiency to new heights.

Studies are being made of various forages to see if certain ones are better adapted for fattening and others for maintenance. Also, it would be important to find out if certain roughages increase the utilization of nutrients from other feeds in the ration.

In order to make these studies, the digestibility of the ration will be determined and the wastes excreted in the urine will be measured. In addition, the exhaled air will be collected and analyzed to determine the use of the nutrients consumed. It may be that certain roughages will be found which are better adapted for fattening, others for pregnancy and still others for lactation.

Mineral Nutrition

Mineral nutrition always poses many problems, from the standpoint of deficiencies as well as toxicities. These problems can be studied very conveniently by the use of radioactive materials. These can be injected or fed to the animal and "traced" throughout the body. By this means, we are learning more and more about the basic functions of minerals and means by which toxicities can be corrected.

Considerable interest centers around the use of "high-concentrate" rations. In some basic research, we have found that a growing lamb requires 0.5% potassium in his ration. Ground ear corn contains about 0.4% and barley about 0.5%. Thus, many of these high-concentrate rations may be deficient in potassium. In the past, we would not have given much attention to potassium since most roughages contain 1-2% of this mineral.

Physical Form of Rations

Another area of work concerns the physical form of rations. This year, an experiment was conducted where corn was fed in high amounts to fattening lambs, with approximately ½ lb. of poor quality alfalfa hay. Steam-cracked corn proved superior to either cracked or flaked corn. Pelleted corn was definitely inferior.

In another experiment, it was found that fattening lambs fed concentrate in the morning and afternoon and roughage at noon outgained those fed a complete ration. We certainly don't know all we need to know about the physical form of rations and the best way they might be fed. Exploratory work similar to that discussed may point out entirely new ways of feeding fattening sheep.

Artificial Rumen

Many "crazy" ideas can be tested in the laboratory by using an artificial rumen. Here microorganisms are obtained from the paunch of sheep or cattle and placed in test tubes containing various rations, vitamins and minerals and the process of digestion studied in detail. From these laboratory studies logical experiments with lambs can be planned which may result in more information than might have resulted otherwise. Thus, the artificial rumen saves time and money in planning experiments.

Oat hay poisoning and other forms of nitrate toxicity are quite troublesome whenever plants are stunted in the growing process because of drouth, frost or other quirks of nature. The rumen organisms can make use of this nitrate, but at a slow rate. If we could speed up this process, ruminants might be able to use feed containing high levels of nitrate with little danger.

Fundamental studies are being conducted along this line in hopes of correcting this problem.

• • •

Chicks and Laying Hens

By Dr. J. E. Savage
Department of Poultry Husbandry

Recent work with purified diets has demonstrated that the hen requires zinc for normal reproduction. On a low zinc diet, egg production rates were decreased, eggs were smaller in size and hatchability was decreased. On the deficit diet many embryos which did not survive showed marked skeletal and appendage abnormalities. Most of the chicks that were hatched from hens lacking zinc were weak and had a high early mortality rate. Hens that received an adequate amount of zinc showed none of the above deficiency symptoms.

Purified diets containing all known nutrients do not support reproduction at levels comparable to diets made up from the usual crude materials. Further studies are planned to investigate the nutritional requirements for reproduction and the effect of maternal diet on the performance of progeny.

Fast feathering egg-strain chicks and rapidly growing broiler-strain chicks were found to have essentially the same requirement for total sulfur amino acids when fed a 20% protein diet. Increasing the protein content of the ration increased the sulfur amino acid requirement but not in proportion to the protein increase.

Other studies showed liver preparations contained a factor which partially counteracted the toxic effects of high levels of thyroid active compounds.

Work will be continued on the requirement of the chick for amino acids, trace minerals and unidentified factors.

Additional information concerning the chicks' response to compounds with hormone-like activity will extend our knowledge of basic physiological processes.

VALUE OF ZINC—This photograph illustrates how deficient maternal diet results in decreased hatch and weak chicks. Chick on left is from hen that received adequate zinc. The two chicks on the right are from a hen on a low zinc ration.

FEEDING SCOTCH O LASS PAID OFF FOR ME!

Fred Kyburz of Chatsworth, Illinois, is a dairy farmer. He has a herd of Holsteins, and here's what he has to say about Scotch O Lass:

RECOMMENDED BY MY DEALER—"On the recommendation of my dealer, Bill Sterrenberg of the Charlotte Farmers Grain Company (Charlotte, Illinois), I have been mixing 100 pounds of Scotch O Lass to each ton of my rations. I find that it helps to encourage greater water and feed consumption—necessary for increased milk production and butterfat content.

A happy customer and a happy dealer, the Kyburz with Bill Sterrenberg of the Charlotte Farmers Grain.

Higher Production

"It steps up their appetites and gives them a nice coat. I use it to get my calves on feed, too. In 1958, my peak year, my average was 577.8 pounds of butterfat per cow with a milk average of 13,450 pounds per cow."

"I wouldn't grind or mix without Scotch O Lass."

Top Rated Farm

With a top quality ration and an excellent management program, the Kyburz farm placed first in the Illinois Dairy Herd Improvement Association Program in 1958. Again in 1959, Kyburz placed 8th in the same program (out of 1700 Holstein herds).

One of Fred Kyburz' Holsteins and his son, Bob

Fred and son on their way to the parlor for another profitable milking session.

A part of the high producing, top rated, Kyburz herd.

IF YOU MIX . . .

You, too, will be glad you recommended Scotch O Lass to your customers. Add Scotch O Lass to your inventory today. It's the product you can buy with confidence and sell with pride. Ask your distributor salesman about Scotch O Lass.

VY LACTOS LABORATORIES

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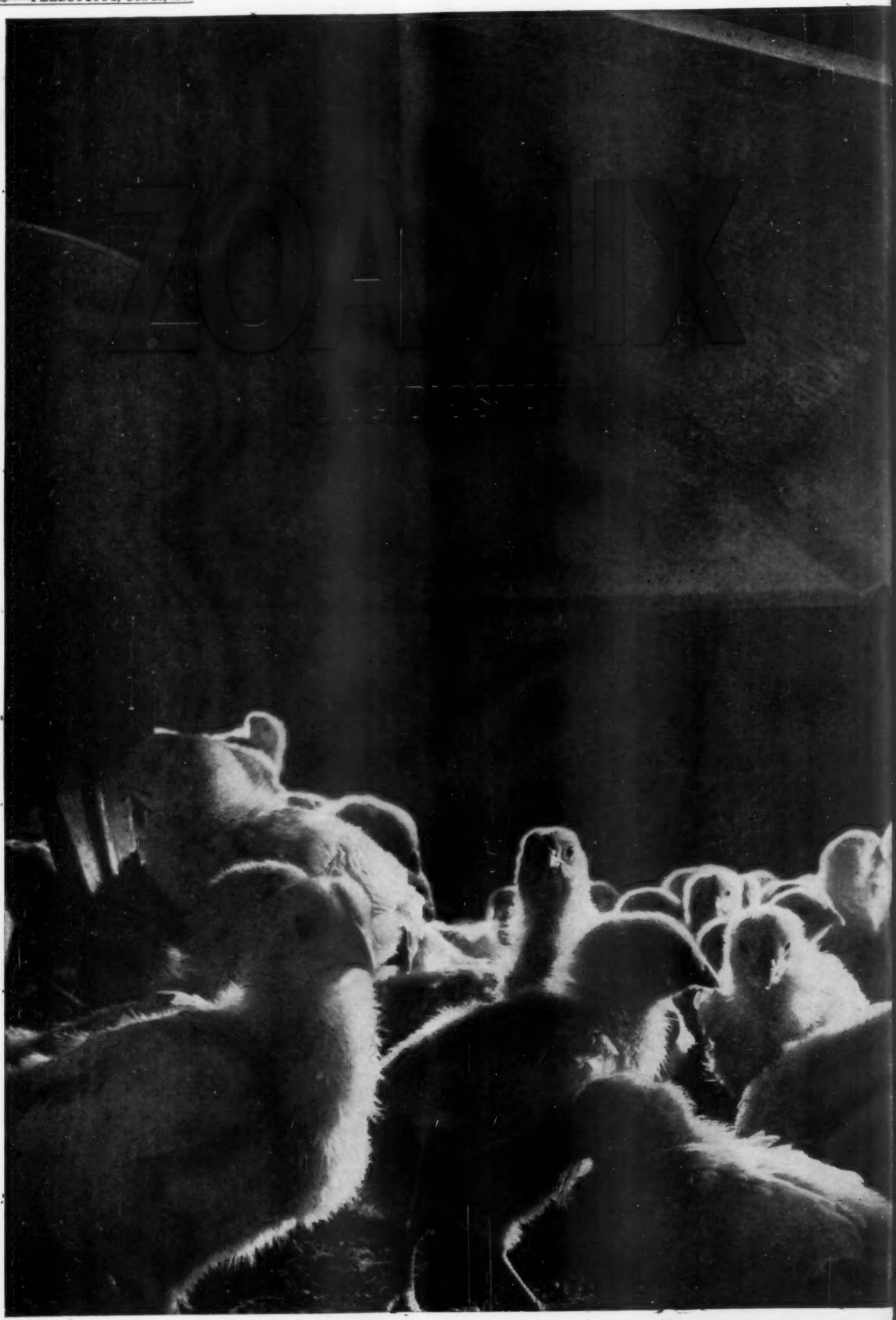
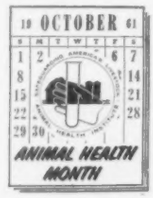

ZO-AD-IX



Allows chicks to develop immunity against "coccy"

. . . Requires No Withdrawal
. . . Offers Long-Term Stability

Whether you sell to broiler or replacement growers, Zoamix® coccidiostat serves you best! A "full stable" of coccidiostats merely confuses customers and creates stock duplication problems for you. One coccidiostat—Zoamix—is approved for feeding both to broilers and replacement birds with no withdrawal period required . . . and provides unsurpassed protection.

And here's another benefit for formulators. *Zoamix remains stable longer!* It can be carried over for as long as 2½ years under normal storage conditions with no loss of potency. Further, Zoamix is most economical . . . quick and easy to assay . . . poses no mixing problems. It allows maximum rate of gain and nutrient utilization. It will not cause physical injury if accidentally fed to laying hens, other farm animals, or if moderately overdosed.

Why inventory several specific products when one—just one—will do the job? You'll have fewer problems . . . make more profits with Zoamix coccidiostat. For further information and data to aid you in registration, write: THE DOW CHEMICAL COMPANY, Abbott Road Buildings, Midland, Michigan, Attn: Feed Industry Sales Section.

1-Minute Test for Zoamix. Simple test enables serviceman to make on-the-farm or in-the-plant check for presence of our coccidiostat in feed. For further information, contact your Dow sales representative.

Polyethylene Boots. Disposable, polyethylene pull-on boots available to feed company servicemen. Helps prevent spreading disease and protects shoes. 25 pairs to a roll. See your Dow representative for details.

Free educational film. "Chemicals: Vital to Our Food Supply," a 22-minute sound and color story of the contributions of chemicals to mankind, is now available for screening or group showings. Film has many references to the poultry industry. For bookings, contact your Dow Feed Industry Sales representative.

THE DOW CHEMICAL COMPANY DOW Midland, Michigan

WARNIMONT FARM SUPPLY MILL—The Warnimont Farm Supply Mill, shown in the photo above, was erected at Malta, Ill., a year ago after a market survey. A one minute a day radio program is being used to tell customers and prospects about its offerings.

Daily Radio Program Helps Get Sales Results for Illinois Mill

By Al P. Nelson
Feedstuffs Special Writer

William C. Hoppe, manager of the new Warnimont Farm Supply Mill at Malta, Ill., uses a one minute daily radio program to tell customers and prospects about the new custom facilities and about Critic feeds, including use of a base mix.

This radio program is broadcast daily by Mr. Hoppe at 12:10 p.m. over WLBK, DeKalb, Ill. Mr. Hoppe keeps his sales messages pointed and short and manages to get a lot of information to listeners for one minute a day, six days a week. The cost of this radio program is $80 a month on a contract basis, or approximately $1,000 a year.

"We are getting results from this program," says Mr. Hoppe. "Many customers tell us they tune in, and they respond to our special offers. I tape many of my programs, and it is always my voice which reaches the listeners."

Mr. Hoppe is a retired feed salesman, who, at 65, still has a lot of merchandising pep and many good feed promotion and service ideas. He tries to establish a personal relationship with all customers of the mill and works with them in handling their vexing feed problems. Occasionaliy, Mr. Hoppe will advertise some farm or other event during his radio time, rather than give a sales message. Such actions help to build good will throughout the trade area.

Following is a one minute feed commercial given to radio listeners by Mr. Hoppe:

Hello Friends . . . This is Bill Hoppe of the Warnimont Farm Supply at Malta. No matter what your forage situation you can continue to put good gains on your cattle all summer. Critic high energy cattle concentrate is scientifically formulated to give your cattle the nutrients lacking in short, dry grass.

"And because Critic concentrate is fortified with stabilized vitamins you get good feed efficiency, low cost gain and high finish.

"See us about your needs in cattle concentrate, minerals, cattle sprays and low cost wormer—or call Malta 1521. From DeKalb call at our expense, Enterprise 3000."

Here is another commercial relating to base mix:

"Hello, Neighbors . . . This is Bill Hoppe of the Warnimont Farm Supply, Malta, Ill. With the profit squeeze on, we farmers must strive to produce milk, meat and eggs for less. Some people like to have us believe that complete rations will help to do just that. Now I believe complete rations are good, provided we farmers use our own or local grains.

"Take pig starter, for instance. Why pay $100 or more a ton? Let's cut down on cash outlay. Bring in your oats, corn, and we will blend your grains with Critic Pig Base and other proteins into a high grade pig starter. Your cash outlay will be only $48 a ton including grinding, hulling, rolling and mixing. If you are short on grain, we will furnish everything at a cost of $87 a ton in bulk.

"Please stop in or call Malta 1521."

In still another commercial, Mr. Hoppe urged hog raisers to see the local veterinarian when pigs are sick. "The veterinarian is the medicine man trained in his profession and licensed by the state," he said. "We are feed men and trained in livestock management and feeding. So won't you please come in and get acquainted with our new push button mill, our bulk and bag handling of Critic Feeds and ingredients, our hulling and rolling of oats, and let us help you with your feeding and management problems? . . ."

The hulling and rolling of oats account for a sizeable volume of business here, advises Mr. Hoppe. The firm processed 27 tons of oats in one order for one farmer recently.

New Mill

Prior to establishing this new push button mill, Jack Warnimont, owner, and Mr. Hoppe conducted a market survey in the Malta area. They discovered that the Malta area was the center of a fine hog and cattle raising region, and so decided to establish a mill here. When the new mill was erected, the firm discontinued a retail store which had been operated at DeKalb, seven miles east of Malta. Mr. Warnimont also operates a custom mill and large farm store at Roselle, Ill.

The new mill is of steel construction and is 50 by 100 ft. including mill and warehouse area. The office area is 20 by 50 ft. and the drive is 15 by 30 ft.

Equipment includes a 100 h.p. Prater hammermill, a 4-ton Prater mixer, a Prater weigh buggy, a Prater hoist, a Prater portable molasses blender, and also a Roskamp huller and roller. The Howe scale has a capacity of 15 tons. Mr. Hoppe states that there are 26 electric motors in operation in the new mill.

Inside the mill are three large round metal bins, each holding 10 tons. They are placed adjacent to the mixer and are very easy to reach with the weigh buggy. One bin holds hog concentrate, another soybean meal and the third bin holds grains.

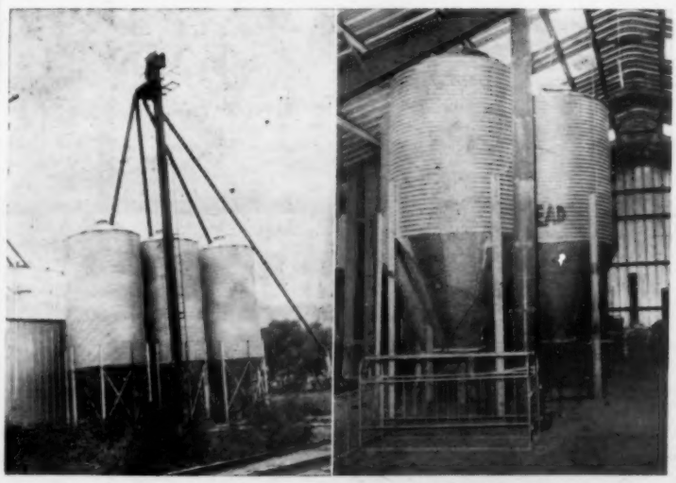
In addition, there are eight inside loadout bins, each holding eight tons.

Near the railroad tracks there are also three 30-ton bins which hold concentrates and other feed ingredients. Such materials unloaded from rail hopper cars get into the bins by

PRICE BOARD—A price board on the wall of the Warnimont Farm Supply Mill office gives latest quotations as shown in the above photo.

EMPLOYEES AT WORK—Warnimont employees are shown at work in the Illinois mill. The man shown at left in the above photo is drawing off ingredients for mixing, while the other employee is sacking feed from the Prater mixer.

BAG DELIVERIES CHECKED—William Hoppe, left, manager of the Warnimont mill, is shown in this picture checking deliveries with an employee. Mr. Hoppe is on a daily radio program telling about the mill.



BINS INSIDE AND OUTSIDE—Outside at the Warnimont mill there are three 30-ton receiving bins at railside, shown in the photo above left. In the picture on the right are three large 10-ton bins located inside the mill.

means of a Huss & Schlieper elevator leg. There is a second elevator leg in the mill.

A large grain bin on the other side of the mill holds 9,000 bu. of grain. An adjacent grain bin holds 30 tons. These bins are used in connection with the firm's grain bank plan. Molasses storage is in a metal tank with a 4,000 gal. capacity.

Feeds are delivered to customers by means of a 5 ton Pamco equipped bulk truck. Much of the firm's feed is delivered in bulk in this area, reports Mr. Hoppe.

"This mill opened in November, 1960," says Mr. Hoppe, "and business has steadily increased. Mr. Warnimont and I feel that the principal reason for this rising volume is the type of quality feeds we provide our customers, plus showing them how to save money by use of a base mix. Added to this, our willingness to serve customers and our promptness in handling their orders, also play a vital role."

Choosing Right Bird Is Not Difficult, Says NEPPCO Speaker

HARRISBURG, PA. — "Choosing the right bird is not too difficult these days," Dr. Steven C. King, chief of the poultry research branch, U.S. Department of Agriculture, Beltsville, Md., told the Northeastern Poultry Producers Council at its annual exposition in Harrisburg.

Dr. King pointed out there are fewer strains to choose from, random sample tests point the way to a wise choice and many strains meet the requirements of the average poultryman.

More important, Dr. King said, is paying attention to management. "The average poultryman could gain a 30% increase in performance by providing better bird management. That is far more than he can get by choosing the right strain," Dr. King said.

"If you should ask, 'How come I don't get the high production or growth rates shown by tests or claimed by salesmen?' the answer is far more likely to be that it's the fault of your management, not the fault of the bird," he added.

Dr. King laid out five rules for high performance: "Start with good chicks, grow them the best you know how, use a balanced feed, use good management, not medication, tend to the little details that mean extra eggs.

"As for the right bird, it's here now. And the combined summaries of random sample test results that show you which one to choose are yours for the asking."

Another exposition speaker was Dr. Howard Zindel, head of the poultry department at Michigan State University school of agriculture, East Lansing, who told how to design poultry housing offering optimum environmental control, effective equipment arrangement, economy of construction, maximum labor efficiency and top performance of birds.

He recommended a 36-foot house, properly insulated, with 1¼ sq. ft. per bird. Equipment should be arranged, he said, so birds can never get more than 10 ft. from feed, water and nests.

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through
WANT ADS
—in—
FEEDSTUFFS

GARNER

(Continued from page 106)

physiological response of ruminants and swine to these various physiologically active constituents of forages.

Forage Testing; G. B. Garner—A. To assay Missouri forages for protein, fiber and moisture in a state wide testing program.

B. To apply the data from Objective A to ration formulation for ruminants as a part of the dairy and animal husbandry extension educational program in animal nutrition and forage products.

Rumen Culture; G. B. Garner, R. A. Bloomfield and M. E. Muhrer—A. Isolation and characterization of natural and synthetic compounds stimulating cellulose digestion by rumen organisms.

B. Improvement of the nutritive value of high-fiber low-protein farm forages by rumen-type fermentation for swine and poultry.

C. Development, improvement and evaluation of techniques in producing a biologically active dried preparation of rumen organisms.

D. Critical study of non-protein nitrogen utilization by rumen organisms.

Effect of Nutrition on Congenital Malformations in the Offspring and on Aging in the Adult Rat; B. L. O'Dell—A. To study the teratogenic effects of nutritional deficiencies and of food additives.

B. To determine the physiological and biochemical functions of minor nutrients important in the prevention of congenital abnormalities.

C. To study the effect of diet composition on longevity and aging.

Critical Nutrients in Guinea Pig Nutrition; B. L. O'Dell—A. To isolate and identify and unrecognized factor(s) that stimulates the growth rate, reproductive performance and disease resistance in guinea pigs.

B. To study the stiffness syndrome in guinea pigs as regards mineral metabolism and possible organic factors involved in wrist stiffness.

Requirements of the Growing Chick for Minerals, Amino Acids and Unrecognized Nutrients; B. L. O'Dell—A. To determine the requirements for and metabolism of the essential trace minerals.

B. To determine the optimum amounts and proportions of the amino acids and to study their metabolism in the chick.

C. To study the nature of and requirement for unidentified growth stimulants.

Biochemical Mechanisms in Swine; M. E. Muhrer—A. Study biochemical mechanisms involved in swine parakeratosis.

B. Study biochemical mechanisms involved in parturition in sows.

C. Study biochemical mechanisms involved in hemostasis of normal and hemophilia-like swine.

CUT YOUR COST OF FUMIGATION

High-potency **Frontier Clorofume®** gives you greatest protection against profit-stealing grain insect infestation . . . at lowest cost per bushel, per month. This easy-to-apply liquid scores highest kills on all stages of insect life, because **Clorofume®** contains more deadly-to-bugs carbon bisulfide than other fumigants — blended with potent ethylene dibromide and chloroform. Listed with UL, registered by USDA and FDA, rated fire and explosion-safe by fire insurance companies, **Clorofume®** protects your grain *and* your buildings. Apply it yourself in label recommended dosages . . . and save 25% or more on positive protection. Order from your distributor, or write direct to P. O. Box 545, Wichita 1, Kansas.

FRONTIER CHEMICAL COMPANY
division
VULCAN MATERIALS COMPANY

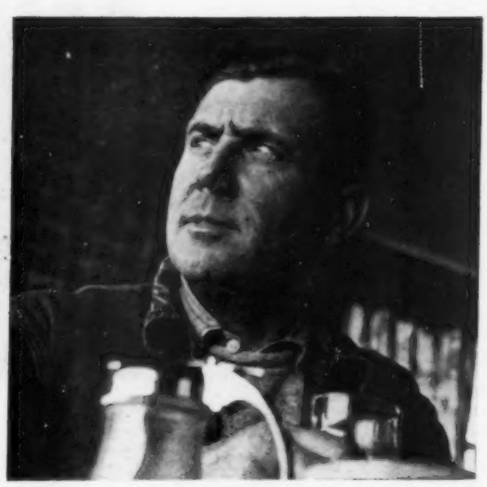
DO-IT-YOURSELF WITH CLOROFUME®

REDISCOVERY

Four feeders prove to themselves that Stilbosol remains most profitable beef gain booster

How do you know if you're following the right feeding program? Well, one way is to get absolute proof you're doing the best you can. For one reason or another, these four cattle feeders quit feeding Stilbosol in their cattle fattening rations. Today, they are once again feeding Stilbosol. They rediscovered the fact that Stilbosol means extra dollars in their pockets. Their stories make for some mighty interesting reading.

"Our cost of gain went down 4¢ a pound when we put Stilbosol back in our ration. We're feeding Stilbosol again... this time for keeps," reports Don Sanderson, S & J Feedlots, Norton, Kansas. "A man couldn't last in this business if he didn't feed Stilbosol. Oh, sometimes he can make a profit if the margin is high enough, but in the long run he's going to go broke."



"We're feeding for profit, and Stilbosol helps us make it. We discovered that we have to feed Stilbosol if we're going to compete," answered Stanley Hurst, Manilla, Indiana. "To stay in this business, you've got to produce as economical as possible. From our past records, we figure we get about ½ pound extra daily gain when we feed Stilbosol. That's for both steers and heifers."

After seven years, Stilbosol continues to give cattle feeders an extra 15% gain on 10% less feed.

"We used to feed Stilbosol. Our first lot of cattle after quitting Stilbosol averaged about 2.5 pounds per day. On the first lot after we went back to Stilbosol... and under almost the same conditions... we got an average of three pounds per day. We figure Stilbosol gives us an extra 100,000 pounds of beef every year. This is based on feeding 1,500 head a year," said Wilbur "Bo" Foster, Auxvasse, Mo.

"I quit feeding Stilbosol for a spell last year. Went back to it though. Why? Because Stilbosol gives us an extra ½ lb. daily gain," stated Jack Dunlap, professional farm manager, Williamsport, Ohio. "You've got to keep abreast of things in this business and you've got to take advantage of developments like Stilbosol. I'll tell you one thing—I know Stilbosol makes us money."

Stilbosol®

(diethylstilbestrol premix)

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Makers of **HYGROMIX®** *(Hygromycin B)* • **Streptomycin Sulfate** • **Micro-Pen®** *(special coated procaine pencillin G)*

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Majority of Mills Use Some Cotton Bags, Study Shows

MEMPHIS — A majority of feed manufacturers responding to a recent survey by the National Cotton Council package some feed in cotton bags.

A questionnaire, mailed to executives of 308 member companies of the American Feed Manufacturers Assn., revealed that 65% of those packaging in cotton use both dress print and plain sheeting bags, the council said.

Twenty-five percent offer dress print bags only, and 10% offer plain bags alone.

The mailing, made at the request of the Textile Bag Manufacturers Assn., was designed to acquaint feed manufacturers with the volume of inquiries received from women asking where they can buy products packaged in cotton bags, the National Cotton Council announcement said.

Of the 39% of manufacturers reporting they do not sell feed in cotton bags at the present time, a substantial number indicated their business had shifted to bulk distribution. Others said they package in paper and returnable burlap bags because of economy. However, at least 14% expressed interest in offering at least one item on their price lists packaged in cotton bags, the council reported.

Manufacturers responding to the survey distribute feed in cotton bags in 44 states, with the heaviest concentration in North Carolina, South Carolina, Georgia, Florida, Texas, Virginia, West Virginia, Mississippi, Alabama, Louisiana, Maryland, Arkansas and Wisconsin.

High Southern Usage

Eighty-nine percent of reporting companies with feed distribution in the southern states use cotton bags for packaging. More than three-fourths of these use both plain and dress print bags.

The National Cotton Council said it plans to make a similar survey of the flour industry in the near future.

From the surveys, the council indicated it will compile a list of areas where cotton bags are distributed by feed and flour manufacturers. The list will be furnished to fair superintendents to use in response to queries from women wishing to obtain bags for entering the National Cotton Bag Sewing Contest, sponsored annually by the council in more than 40 state and regional fairs.

Net Sales Announced

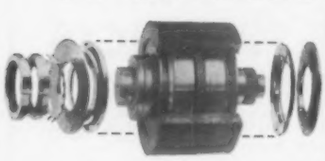
NORFOLK, VA. — Smith-Douglass Co. has announced that for its operating year which ended July 31, net sales totaled $55,800,146.

Profit before taxes was $5,086,392. Net profit after taxes was $2,736,392 or $2.60 per share of common stock, the firm's announcement said.

DOG FOOD FOR TEXAS—Valley Mills, Vicksburg, Miss., has expanded into Texas with Val-e-pep, a new dog food for hunting dogs. In the picture, H. M. Gastrell, left, manager of Val-e-pep sales, is showing the first car going into Texas to Harry R. Gillespie, center, sales manager, and V. C. Florian, general manager of Valley Mills.

LEADERSHIP through RESEARCH

NEW PRODUCTS DESIGNED BY LANDERS



Landers Grease Seal Collar

No press is needed to assemble this all new seal. No felt or leather pads. Only the 35¢ metal safety seal gets the wear.

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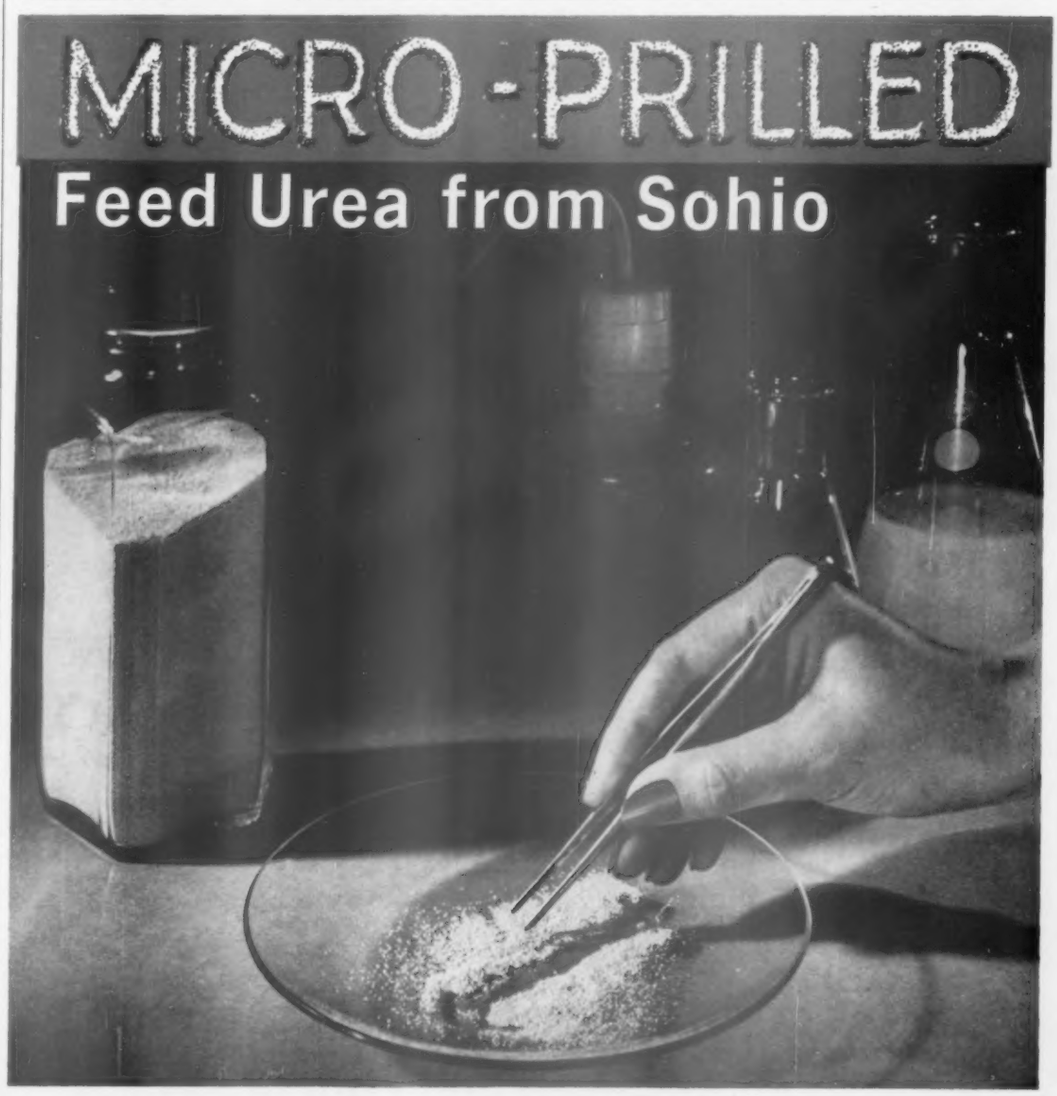

The free-flowing, non-caking protein source that meets every quality test

Sohio Feed Urea is much more than just an ordinary nitrogen-supplying, 262% protein source. Constant quality control assures the reliability of free-flowing, micro-prilled Sohio Feed Urea. It's non-caking and dust-free . . . sized and shaped to mix and stay mixed in your feeds. Unloads easily, moves along without bridging. Customers who begin using it stay with Sohio Feed Urea because of its high, dependable quality. For top urea value . . . and substantial savings over high-priced protein meals . . . call your "Man from Sohio."

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AF-1R

Names in the News

DR. PARKHURST TRANSFERRED TO STATE COLLEGE, MISS.—Dr. Raymond T. Parkhurst, USDA poultry research scientist, has been transferred from Beltsville, Md., to State College, Miss., to perform his duties as director of the South Central Poultry Research Laboratory.

Dr. Parkhurst will be headquartered temporarily in the new Boll Weevil Laboratory at Mississippi State University, State College. The poultry laboratory, now under architectural planning, is expected to be completed July 1, 1962. Work in the laboratory will concern the relation of management and environment to poultry health.

The South Central region, which the laboratory will serve, consists of Alabama, Arkansas, Kentucky, Louisiana, Mississippi, Oklahoma, Tennessee and Texas.

NUTRENA NAMES CHARLES DEWETT TO PEORIA POST — Charles S. Dewett, grain merchant in the East St. Louis, Ill., office of Cargill, Inc., has been named Nutrena Feeds central region purchasing and pricing manager in Peoria.

Ralph V. Grier, central region manager, said Mr. Dewett succeeds Vern C. Dean, recently named special assistant to Nutrena's president, James C. North, Minneapolis.

Mr. Dewett joined Nutrena in Memphis in 1951 as area salesman. He was in charge of the firm's Memphis traffic desk and was East St. Louis branch manager before joining Cargill's grain division in 1960.

Dewett is a 1951 graduate of the University of Arkansas with a major in business agriculture.

DAWE'S LABORATORIES APPOINTS Z. Z. DWORKIN—Dawe's Laboratories, Inc., Chicago, has appointed Z. Z. Dworkin as sales manager, fine chemicals division. For the past two years Mr. Dworkin has been located in Palo Alto, Cal., as western regional manager of the company's feed additive division.

SECO ANNOUNCES THREE APPOINTMENTS — SECO, Inc., Goodlettsville, Tenn., has announced appointments of three sales representatives.

Edward S. Paige has been named

Ross Watson

Edward S. Paige

mobile milling sales representative for northern Indiana, and Roy A. Armstrong and Ross Watson have been appointed in the industrial division to specialize in stationary milling and materials handling equipment, according to Paul J. Zimmerman, executive vice president of the firm.

Roy A. Armstrong

Mr. Paige will specialize in the sale of SECO pushbutton mobile feed mills in the Indiana area. Prior to joining SECO, Mr. Paige worked with Hamilton Watch Co., Lancaster, Pa., and had previously served as sales manager for General Gilbert Clock Corp., Winsted, Conn. Mr. Paige also served as sales manager for the Ingram Co., Bristol, Conn., manufacturer of watches and clocks.

Mr. Paige is a graduate of Trinity College, Hartford, Conn., where he majored in civil engineering and physics.

A native of Stow, Ohio, Mr. Armstrong was recently discharged from the U.S. army 101st airborne division. He will handle sales in western Tennessee.

Mr. Watson was formerly employed as a milling equipment salesman by O. B. Wise Co., Knoxville, Tenn. His territory will include eastern Tennessee, southeastern Kentucky, Virginia and the northern regions of Alabama and North Carolina.

EARLY & DANIEL APPOINTS VICE PRESIDENTS—The Early & Daniel Co., Cincinnati, Ohio, has appointed two vice presidents, Michael W. McGrath and Robert Lee Early, Jr., according to an announcement by Robert Lee Early, president.

Mr. McGrath joined Early & Daniel in 1941, and was in charge of grain merchandising at the company's 2½ million bushel Louisville elevator. In 1958, he was transferred to the Cincinnati office, where he was responsible for grain merchandising through the company's elevators at Fairmount and Riverside.

Robert Early, Jr., has been with

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1. Effective Control–

of all commercially important species of coccidia.

2. Superior Feed Conversion–

. . . up to $40 extra profit per 1000 birds in impartial comparative tests.

3. Complete Safety–

for poultry . . . harmless to other warm blooded animals.

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BoDEE (Mineral) STABLE VITAMINS D
Vita D that will not decompose when combined with minerals.

BoDEE
Vitamin D-2 or D-3 in dry, oil or water dispersible forms.

BoA-S and Bo-A
Stable dry vitamin A products.

BHT
Oil soluble Vitamin protecter and pigmentation aid.

HYDROPOID
Dry, free-flowing partially hydrogenated animal fat.

XANTHOPHYLL CONCENTRATES
For better poultry pigmentation.

CLOROFOLEN
Effective dog food deodorant.

ENZYMATIC SYSTEMS

Bowman Feed Products, Inc.
130 Central Ave. HOLLAND, MICH.
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- Over 2,000 Feed Mills Throughout the United States and Canada!
- Approximately 90% of the Mineral Feed Mixers!
- 26% of the Feed Manufacturers on the AFMA NUTRITION COUNCIL—All Highly Regarded Nutritionists—Use It in Their Own Feeds!

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They Know: RESEARCH AND EXTENSIVE USAGE PROVE, AND WE GUARANTEE, SOFT PHOSPHATE PERFORMS AS WELL AS THE HIGH PRICED PHOSPHATES—WHEN USED PROPERLY! (Further information on request.)

- IT ENABLES THEM TO REDUCE FEED COSTS, YET MAINTAIN QUALITY AND FEED EFFICIENCY!
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The Cost Is Only **$16.15** *per Ton Sacked and Low Freight Rate (F.O.B. Florida)*

SOFT PHOSPHATE, INC.
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A Natural, Research-Proven, Sensibly Priced Phosphate That Has Fortified More Than 100,000 Tons of Feed

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Kansas City 1, Mo.
Wichita 2, Kansas

KELL-PHOS
Buffalo Feed & Supply Co.
P.O. Box 2434
Buffalo 24, N.Y.

WARD'S FLORI-PHOS
Chamberlain Agricultural Supplies
41 Branch Street
St. Louis 7, Missouri

SEA-COLL
Co-operative Feed Dealers, Inc.
P.O. Box 431
Binghamton, N.Y.

KELL-PHOS
Draper Gosselin Grain, Ltd.
68 Yonge Street
Toronto 1, Ontario, Canada

SEA-COLL
Cliff C. DuBois & Co.
P.O. Box 1136
Mason City, Iowa

SEA-COLL
Fred De Hoff Company
721 Main Street
Redwood City, California

KELL-PHOS
E. H. Kellogg
The Kellogg Company
P.O. Box 665
Ocala, Florida

SEA-COLL
Harris-Crane, Inc.
516 Charlottetown Mall
Charlotte 4, N.C.

KELL-PHOS
The Higbee-Carlin Company
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Kansas City 5, Mo.

SEA-COLL
Interprovincial Co-operatives, Ltd.
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Seattle 6, Washington

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COLLOFOS
Frank Seitz Sales Co.
1510 Thirty-First St.
Des Moines 11, Iowa

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1006 Liberty Life Bldg.
Charlotte 2, N.C.

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Sea Board Supply Co.
35th & Grays Ferry Avenue
Philadelphia 46, Pa.

KELL-PHOS
Schmitt & Kern, Inc.
3421 Park Ridge Blvd.
Fort Worth 9, Texas

KELL-PHOS
Carroll Swanson Sales Co.
P.O. Box 1034, U.P. Sta.
Des Moines 11, Iowa

SEA-COLL
Harry E. Theiss
727-A St. Louis Road
Collinsville, Illinois

WARD'S FLORI-PHOS
Ward Feed Company
Commerce Building
Glen Ellyn, Illinois

SEA-COLL
Wilson Brokerage
Military Park Building
Newark 2, New Jersey

Robert Lee Early, Jr. Michael W. McGrath

the company since 1939, except for three years during World War II. He has been in charge of grain merchandising of the company's Kentucky Public Elevator in Louisville since 1951, when he was transferred there from Cincinnati.

E. P. HENDERSON, SCHENLEY EXECUTIVE, RETIRES—E. P. Henderson has retired as vice president and manager of Schenley Distillers, Inc., feed and grain division. He was honored recently at a luncheon at the Cincinnati Club by friends and business associates from Louisville, Indianapolis, Chicago, Milwaukee, Minneapolis, Lawrenceburg, where he resides, and Cincinnati.

Mr. Henderson will maintain an office at the Schenley Lawrenceburg plant and will engage in special assignments for the company.

NOMINATE IASC PRESIDENT—C. A. C. de Boinville, Great Britain, has been nominated by the consultative committee of the International Association of Seed Crushers to succeed the late Guy Chipperfield as president of the association. His election will be proposed at the 1962 IASC Congress at Cannes, June 5-8.

C. A. C. de Boinville

Mr. de Boinville is a vice president of the association and is deputy chairman of Unilever's U.K. Milling Group. Educated at Radley, and at Wadham College, Oxford, where he took an honors degree, he joined Unilever in 1936. Following World War II, Mr. de Boinville was appointed deputy manager in Scotland for the British Oil & Cake Mills, Ltd. He became a director of that company and area manager for Scotland and Northern Ireland in 1951. In June, 1959, he was appointed vice chairman of BOCM and a member of the Unilever U.K. Milling group.

BEMIS BRO. BAG CO. DIVIDES AREA—The Bemis Bro. Bag Co. has divided its geographical central operations area into central and northern operations areas with T. H. Ashton as director of the northern and S. M. Spencer director of the central.

Judson Bemis, president, said the realignment was made "to adjust to the needs of the company's broadening product lines and operations, and to provide a smooth transition

T. H. Ashton S. M. Spencer

in anticipation of the retirement next spring of Mr. Ashton, who has directed this area since January, 1956."

Mr. Ashton, as northern operations director, will retain responsibility for the Bemis Indianapolis, Minneapolis and Peoria plants, and the Chicago, Indianapolis and Minneapolis sales divisions, as well as the Minneapolis general sales division.

Mr. Spencer, in the revised central region, will direct the company's Kansas City, Omaha, St. Louis and Wichita plants and sales divisions.

Mr. Ashton has been with Bemis since 1919, joining the company as a salesman with the Omaha sales division. Mr. Spencer joined Bemis in 1937, was named manager of the company's Omaha plant and sales division in 1958, and became manager of the St. Louis plant and sales division in 1960.

In addition to the new northern and central regions, the company has eastern, western and southern operations areas.

QUAKER OATS APPOINTS DR. OUSTERHOUT — The appointment of Dr. L. E. Ousterhout as a member of the research staff, specializing in poultry nutrition, has been announced by The Quaker Oats Co., Chicago.

Dr. L. Ousterhout

Dr. Ousterhout received his B.S. degree at Oregon State College, Corvallis, and his Ph.D. from the University of California, for studies in amino acids and protein nutrition in poultry.

In recent years, he has become noted in the feed trade for his work on variations in the nutritive quality of fish meals, while engaged in research at the technology laboratory of the Bureau of Commercial Fisheries.

WILLARD WAKEMAN JOINS HONEGGERS' SALES STAFF—Willard Wakeman has been added to Honeggers' & Co., Inc., sales staff in Kansas, Robert S. Slayton, vice president and general sales manager for the feed manufacturers announced. Mr. Wakeman will be district sales manager for the Wichita area.

Willard Wakeman

For the past seven years he was a territory manager and resale man for a Kansas City feed firm. Prior to that he operated his own feed and produce business. Mr. Wakeman will repre-

GOOD NEWS FROM DPL

POLYVALENT BRONCHITIS PROTECTION

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DPL's new improved

NEWCASTLE-BRONCHITIS Vaccine with a Polyvalent Bronchitis Fraction

Protects against 2 PREVALENT TYPES OF BRONCHITIS

Instead of being able to immunize against only one type of Infectious Bronchitis (leaving your birds partially unprotected against the other type), you can now really protect your flock by using DPL's Newcastle-Bronchitis vaccines with the Polyvalent Bronchitis Fraction.

Ever since poultry researchers* succeeded in isolating more than one serotype of Infectious Bronchitis virus, Delaware Poultry Laboratories' scientists have been studying this important new concept in Bronchitis protection. The recently developed Polyvalent Vaccine will stimulate antibodies to protect your birds against strains of two types of Bronchitis prevalent throughout U. S. poultry areas.

These new DPL vaccines offer broader, surer protection. They can be applied intranasally, intra-ocularly, or in drinking water. This important product improvement is available from DPL with B_1 or N-63 strains of Newcastle virus at no additional cost. For full information, write DPL today!

*Jungherr and others at the University of Connecticut, Hofstad at the Iowa State University, and others.

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sent the complete line of Honeggers' products—feeds, chicks, farm buildings and livestock and poultry equipment.

RICHARD LINDER PROMOTED BY ALLIED MILLS — Richard E. Linder has been named district sales manager of the Chiefs district of Allied Mills, Inc., according to T. W. Graham, general sales manager.

Richard E. Linder

Mr. Linder was a veteran Wayne Feed territory salesman in northeastern Ohio and, in his new position, is directing sales from the Indianapolis district office covering the southern two thirds of Indiana and Kentucky.

Mr. Linder joined Allied Mills in 1950 as an assistant salesman, and soon became a territory salesman in northeastern Ohio. He holds a B.S.A. degree in agricultural economics from Ohio State University.

JAMES A. SELBEE NAMED DIAMOND SALT REGIONAL MANAGER—James A. Selbee has been appointed regional manager of the three-state Charlotte, N.C., region of Diamond Crystal Salt Co., Spencer S. Meilstrup, vice president and general sales manager, announces.

Mr. Selbee succeeds Earl B. Adams who has retired. A 13-year company veteran, Mr. Selbee was previously assistant manager of industrial sales at the firm's St. Clair, Mich., headquarters.

JAMES MILNER JOINS MILLER MANUFACTURING CO. — James F. Milner has joined Miller Manufacturing Co., Inc., Modesto, Cal., as vice president for nutrition and technical services, according to E. D. Thompson, president.

Because of a worldwide marketing agreement with Food Machinery & Chemical Corp. International, San Jose, Cal., the addition of Mr. Milner is "extremely important" to the Miller staff to advise overseas customers on the proper use of their existing feeding products and to give technical assistance on the feed plants after they are installed in various parts of the world, according to Mr. Thompson.

Mr. Milner will be available to assist with domestic feed seminars, and will serve both the large feeder and the small operator.

CORRECTION — The pictures of Arthur R. Hill and Donald W. Hansen were incorrectly identified in this column in the Oct. 14 issue of Feedstuffs. Proper identification is indicated in the accompanying photos.

Mr. Hansen has been named sales promotion manager of the feed ingredients department of International Minerals & Chemical Corp., Skokie, Ill.

Donald W. Hansen

Arthur R. Hill

Arthur R. Hill, Inc., Seattle, Wash., supplier of feed ingredients, has been appointed northwest sales agent for Smith-Douglass CDP (defluorinated phosphate) and DIKAL (dicalcium phosphate). With Mr. Hill in the Seattle firm is C. G. Buckton.

KELLY DUPLEX PIT AUGER
(ear corn conveyor)

a more efficient, more dependable system of pit unloading

1. Handles HUSKED and SNAPPED EAR CORN and all types of small grain.
2. Assures you BIG CAPACITY at LOW HORSEPOWER.
3. Gives you VARIABLE SPEED CONTROL . . . MORE UNIFORM DELIVERY.
4. REQUIRES LESS MAINTENANCE than any other type of pit unloader.

Built to meet your needs, the Kelly Duplex Pit Auger can be furnished in any length with choice of 12", 14" or 16" diameter screw—can have any length hopper opening—can have drive unit located at either end of the machine—and can be equipped with any size motor.

The Kelly Duplex Pit Auger offers you an entirely new system of pit unloading—a system designed to give you better delivery and BIGGER PROFITS. Constructed entirely of heavy, arc welded steel . . . it handles both husked and snapped ear corn as well as all types of small grain—assures an even, uniform flow of material—is smooth and noiseless in operation—and gives you big capacity at low horsepower. Maintenance costs are low because there are fewer moving parts—and far less chance of breakdown—than with any other type of pit unloader. Features include an inspection door at the discharge end . . . an enclosed gear reducer and enclosed roller chain drive, both of which run in oil . . . and variable speed control. An automatic motor control, which keeps auger from causing ampere fluctuation on a hammermill or other machine, is available as optional equipment.

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The Duplex Mill and Manufacturing Company
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Springfield, Ohio

Yes, I'm interested in the KELLY DUPLEX machinery checked at the right. Please send me full information on these machines without any obligation.

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☐ Electric Truck Hoist
☐ Chain Drag
☐ Corn Sheller with Blowers
☐ Regular Corn Sheller
☐ Pitless Corn Sheller
☐ Combined Sheller-Cleaner
☐ Gyrating Cleaner
☐ Corn Scalper
☐ Corn Crusher
☐ Corn Cutter and Grader
☐ Corn Crusher-Regulator
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Classified advertisements received by Tuesday each week will be inserted for the issue of the following Saturday. Rates: 25¢ per word; minimum charge $3.75. Situations wanted, 20¢ a word; $3.00 minimum. In figuring cost of your classified ad . . . each word, abbreviation, telephone exchange and number, set of initials, or group of figures counts as a word. To the number of words in your want ad itself add six (6) words for your name and address or name and address of your firm. This applies for both direct-reply ads and for blind ads containing a box number. If an ad is keyed, care of Feedstuffs, 25¢ per insertion additional charged for forwarding replies. Commercial advertising not accepted in classified advertising department. Display advertising accepted for insertion at minimum rate of $14.00 per column inch. No discount on ads ordered for more than one insertion.

All Want Ads cash with order.

HELP WANTED

FEED MILL SUPERINTENDENT WANTED for major feed manufacturer. Must be experienced in production, plant operation and management. Excellent opportunity for capable man. Send resumé of experience, education and background. Address Ad No. 7339, Feedstuffs, Minneapolis 40, Minn.

FOREMAN — DUE TO ACQUISITION OF new plant, have immediate need for foreman experienced in soybean oil extraction plant, or in an allied industry. Location will be outside of Minneapolis but in the upper Midwest. Send complete resumé to G. A. Joines, Cargill, Inc., 200 Grain Exchange, Minneapolis 15, Minn.

FIELD REPRESENTATIVE WANTED FOR service and sales to Midwest farmers. Training and/or experience in livestock and poultry feeding and management necessary. Successful sales experience in feed or other agricultural products preferred. Position offers good salary, commission, company benefits. Address Ad No. 7328, Feedstuffs, Minneapolis 40, Minn.

INGREDIENT BUYER-TRAFFIC MAN

Party with ingredient buying experience including vitamins and antibiotics, and with working knowledge of traffic movement, can qualify for interesting position with Midwest feed manufacturer. Reply in confidence stating qualifications and experience to— **Ad No 7345, Feedstuffs Minneapolis 40, Minn.**

SALES MANAGER

A progressive midwestern feed company interested in expansion is seeking an aggressive, dynamic individual with proven ability in sales development and administration. You will be responsible for building a strong organization of dealers and district sales managers. As your organization develops you must be able to assume complete marketing responsibilities. Experience with animal nutrition and livestock is very important. College degree is desired but not essential. Earnings up to $15,000 from salary and bonus, plus car, expenses and fringe benefits. Excellent opportunity for eventual part ownership. Send resume to

Ad No. 7348, Feedstuffs Minneapolis 40, Minn.

SALESMEN WANTED

We are seeking salesmen for New England and Middle Atlantic States. This position requires traveling with a car and expenses are provided. We are forming a new sales organization. We are a large and long-established National Manufacturer of feed ingredients. The men we are looking for should have sales experience calling on feed manufacturers. Compensation is salary and expenses. All replies are strictly confidential.

Address Ad No. 7191, Feedstuffs Minneapolis 40, Minn.

EXCELLENT OPPORTUNITY

FOR LIVESTOCK NUTRITIONIST WHO SEEKS RESPONSIBILITY AND LEADERSHIP

We are looking for a man to head up our nutritional department who has an advanced degree in animal nutrition. He must be personable, able to speak to groups in layman's terms, understand livestock feeding problems, be responsible for the formulation of a complete line of feeds and handle feed test lots.

To the man who can qualify for this position, we offer an unlimited future opportunity, good salary, profit sharing and medical and hospital plan. We are located in the heart of the Midwest where ideal living accommodations are prevalent. We need this man as soon as possible, as we are expanding rapidly. All inquiries should be directed to—

Ad No. 7349, Feedstuffs, Minneapolis 40, Minn.

All inquiries will be treated as confidential in nature.

MARKET RESEARCH

Expansion and diversification of our marketing research activities requires an additional analyst for agricultural products. 3-5 years' experience in market research techniques, and agricultural background or education helpful. New York City headquarters.

Send full details of your education, background, experience and salary requirement to: W. A. Thompson

Pfizer **CHAS. PFIZER & CO., INC.**

235 E. 42nd Street New York 17, N.Y.

BUSINESS OPPORTUNITIES

FOR SALE—LARGE FEED MILL, STORage; irrigated; dryland area. Roman Weninger, Akron, Colo.

FEED MILL, CENTRAL CALIFORNIA— Storage capacity 4,500 tons, complete mill, mixing capacity 13,000 tons. Bulk truck, own spur track S.F. Ry.; 1¾ acres land, with house. Address Ad No. 7347, Feedstuffs, Minneapolis 40, Minn.

POPULARITY OF OUR MEDICATIONS for poultry and livestock growing fast. If you are a distributor or manufacturers' representative wanting new opportunity, or a qualified service salesman, write: Naremco, Box 1572, S.S.S., Springfield, Mo.

FOR RENT—WOODSTOCK, ILLINOIS. EStablished feed and grain elevator. All modern equipment. Well stocked. Large bulk and bag storage areas. Railway siding. Ideally located in grain producing area. Financing or partnership available to responsible party. Contact: Carol Franks, Marengo, Ill.; Jordan 8-8581.

MACHINERY WANTED

USED 50 FT. TRUCK SCALE — OHIO Blenders, Inc., Box 28, Toledo 11, Ohio.

WANTED — GOOD USED PELLET MILL. Underwood's Service Co., 2013 58th Street, Lubbock, Texas; Phone: SH 4-7043.

BAG CLOSING SEWING MACHINES AND equipment. Any type—condition. McCullough & Co., 8205 Paradise Lane, Kansas City 34, Mo.; SO 1-2857.

3 OR 4 MOBILE MILLS, PREFERABLY Daffin late models. State age, make, condition and low dollar wanted. Address Ad No. 7300, Feedstuffs, Board of Trade Bldg., Kansas City 5, Mo.

WANTED TO BUY—RICHARDSON scales, bag closing machines, other good flour, feed and grain machinery. Complete plants bought and sold. Appraisals. J. E. Hagan Mill Machinery, Box 574, Jefferson City, Mo.

SITUATIONS WANTED

FEED MILL SUPERINTENDENT — MARried, 16 years' experience formula feed manufacturing. Address Ad No. 7351, Feedstuffs, Minneapolis 40, Minn.

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FEED MIXER, 1-TON CAPACITY, GUARanteed first-class throughout, 5 H.P. motor drive. Address Ad No. 3479, Feedstuffs, Minneapolis 40, Minn.

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SPROUT - WALDRON MODEL 500-B Junior Ace pellet mill complete; stainless-steel feeder conditioner, feeder drive, one pair rolls, die. Mill purchased for pelleting experiments on chemical product. Operated approximately 1,000 hours. Price: Approximately 80% of purchase price. Reichhold Chemicals, Inc., Box 3547, Seattle, Wash.; Attention: Palmer.

CAMPBELL TOWER GRAIN DRYER, CONtinuous flow, self housed, model 417A20. Natural or propane gas. Complete with automatic controls. Very good condition. Capacity 350 bushels corn per hour with 5% moisture reduction. Will sacrifice at less than half replacement cost. Colorado Alfalfa Products Co., Milliken, Colorado; Phone 588-4353.

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Set Support Program For Eggs in Canada

OTTAWA, CANADA — The price support program for eggs for the period Oct. 1, 1961, to Sept. 30, 1962, will be essentially the same as last year with some slight changes, according to Alvin Hamilton, agriculture minister.

Grade A medium eggs will now be eligible for support within the 4,000 doz. limit to each producer. The support will be 34¢ doz. to producers, on the basis of grade A large eggs, which is below the estimated national average price of 34.5¢ for the year just ended. The level of support represents approximately 87% of the 10-year average. The support price the past 12 months was 33¢ doz., grade A large.

The deficiency payment program of support for eggs that applied last year will be continued, the minister said, but, he pointed out, it has now been extended to include grade A medium eggs. In previous years the program applied only to grade A extra large and grade A large eggs. Under this method of support, the Agricultural Stabilization Board will make a deficiency payment based on the amount by which the national average price received by producers for grade A large eggs for the 12-month period is less than the support price.

Payments to any one producer during the support year will be limited to 4,000 doz. grade A extra large, grade A large and grade A medium eggs.

MICHIGAN

(Continued from page 11)

for feeding the first 10-14 days—one flat for each 100 birds.

Mr. Williams said he advocates a very strict vaccination program, and suggested the birds be vaccinated for Newcastle/bronchitis in the drinking water. This, he maintained, should be repeated at 4 weeks of age and again at 12 weeks, with fowl pox vaccinations at about 14 weeks.

After the first day, he said, chicks are fed chick starter in a crumble form. This is continued until the birds are 5 weeks old. From 6-12 weeks, they are fed a 16.5% all-mash grower ration, and then put on a 14.5% developer ration until lay.

The only continuous medication used is the coccidiostat that is fed during the first 14 weeks, although the birds are checked weekly by a flock supervisor. All birds are wormed twice during the growing period—once at 5 weeks and again at 12 weeks.

Proper debeaking is important, he said. This is done the first day and again at about 14 weeks. Vitamin K is usually fed prior to debeaking to aid in preventing bleeding and death loss from bleeding.

Mr. Williams also pointed out that good sanitation must be a part of any pullet rearing program. This begins, he said, before the birds are started by having a well-cleaned and well-disinfected building.

He also indicated he is experimenting with the "step down-step up" lighting program. He feels that this program is very helpful and will increase the profits of his customers and will help him to sell more pullets.

Reveals Flock Costs

Mr. Williams revealed some costs for one flock—a flock of 11,000 birds with a livability of 97.3% for 21½ weeks. The feed conversion was 13.2 lb. per bird for 16 weeks. The birds were in a tempered-air house at 1 sq. ft. per bird. They were on all litter with gas brooders. These costs were: Chick cost (number raised), 46.2¢; feed cost (16 weeks), 57.5¢; raising cost (16 weeks), 25¢; gas and electricity, 4.6¢; medication, 1.1¢; vaccination and debeaking, 4.1¢; moving, etc. (trucked 350 miles), 8¢. Total cost for 16 weeks, $1.46½.

This cost, Mr. Williams added, represents all items charged at retail. "We attribute our success so far to the top-notch facilities we have, and feel that planning and close supervision have paid dividends in good livability and good quality pullets."

Dr. Robert Ringer of the MSU Department of Poultry Science reviewed a two-year research project on the Michigan State campus on aortic rupture. Turkey growers remember evidences of aortic rupture, or internal bleeding, as early as 1940, although the earliest reported case in this country was in 1952 in Minnesota, he said.

The seriousness of this disease was emphasized by Dr. Ringer who reported that, of all the growing turkeys brought into a midwestern laboratory, aortic rupture was the No. 1 killer.

Although there are no symptoms in the live bird prior to death, he said, they are evident after death. The most noticeable external symptom he described as paleness of the head due to lack of blood. The disease can be detected internally by a large blood clot in the body cavity. The disease is generally found in the larger breeds of birds, such as the Broad Breasted Bronze or Broad Breasted White.

The disease generally hits the best growing birds in the flock, he said, and is most prevalent in males. The disease also is sporadic—it hits a flock and then disappears.

MSU research reveals that aortic rupture has a direct relationship with the high blood pressure of the birds. The cause may be due to a condition of hardening of the arteries, or atherosclerosis, which weakens the blood vessels, causing them to break when there is stress.

A normal, healthy bird can withstand the effects of this high blood pressure, said Dr. Ringer. But what causes a weakening of the bird is the subject for considerable research, he added.

The factors under consideration include nutrition, management, physiology and heredity, he declared. There hasn't been any conclusive research up to this time regarding the nutritional aspects of the disease, he said. As for management, the use of estrogen, now prohibited in the fattening of poultry, might have a connection, he added.

The physiological aspects of the disease indicate that in the aorta of diseased birds, particularly in the area where the rupture occurs, there is direct evidence of hardening of the arteries.

Heredity may provide the key to the disease, for there seems to be strain differences in the birds, said Dr. Ringer. Turkeys could inherit, just as humans do, a certain level of blood pressure and a predisposition for hardening of the arteries. It is along this line that research is being continued at Michigan State.

The current treatment is a tranquilizer, reserpine, which lowers blood pressure in turkeys. It is administered where there is evidence of the disease in a flock. Other new drugs are being tested, he admitted, although none so far has shown great promise for arresting the disease.

Dr. Ringer added that if there is a casual relationship with genetics, there may someday be a method of eliminating the disease through selection. But, he concluded, it looks like this is quite far off and we will just have to live with aortic rupture for some time.

Other topics on the two-day agenda included looking ahead in breeding, how dairymen promote dairy products, fumigation methods and the role of Michigan veterinarians in a changing poultry industry. Annual meetings also were held of the Michigan Poultry and Hatchery Federation and the Michigan Turkey Improvement Assn.

The conference was sponsored jointly by the MSU department of poultry science, college of agriculture, the Cooperative Extension Service and the Michigan Poultry and Hatchery Federation.

Steady to Lower Cattle Prices Expected

WASHINGTON—Stable cattle prices are expected this fall, with fed cattle likely to hold relatively close to present levels for the next several months and average slightly below prices a year earlier, the U.S. Department of Agriculture says.

Cattle slaughter this fall is expected to total near last fall with increases in fed cattle accounting for any gain. The number of cattle and calves on feed July 1 in 26 major feeding states was only 2% larger than July, 1960, but most of the gain was in cattle weighing 700-900 lb. At an average gain of 75 lb. per month these animals are nearing a desirable weight and finish for market.

Supplies of grass cattle will be no larger than a year ago, and it currently appears that as many as last year will move into feedlots or onto winter pastures. The season for large cow slaughter is at hand, but slaughter is not expected to equal last fall.

USDA says heavy feeder steers will do well to hold their present price position this fall. Less favorable feeding returns and the prospects for higher feeding cost may make feedlot operators more cautious in bidding for replacement stock.

More calves will probably be available this fall, but supplies of yearling steers and heifers are probably close to last fall.

Higher Grain Prices

The prospect for higher feed grain prices during the coming feeding year probably will have more effect on light cattle than on heavier steers and heifers.

Feed costs make up a larger part of total costs for feeding systems covering longer periods. Any improvement in cattle feeding margins for such systems in the coming feeding year must come from a higher price at selling time, a lower purchase price, or a combination of these.

New Record Likely

Number of cattle and calves on farms and ranches Jan. 1 will probably set a new high of around 98 million head. The nation's cattle herd last January was estimated to be 97.1 million head. The 1961 calf crop is expected to total 39.7 million, 1% more than the 1960 crop. Adding expected imports gives a total supply of about 137.5 million head. From this supply probably will come a slaughter of about 35 million head of cattle and calves this year and estimated death losses and other disappearance of about 4.5 million head, leaving approximately 98 million head on hand at the end of the year.

USDA says a gain this large is about the size needed to keep beef production in step with population.

Cattle slaughter thus far this year has totaled nearly 4% above a year earlier. Most gain was during the spring months, since summertime slaughter was close to a year before.

The average price to producers for beef cattle has reflected changes in slaughter. Prices were relatively steady during winter months, declined during the spring under pressure of increased receipts, but rose as slaughter eased off this summer.

The average price for steers and heifers was above a year earlier in January and again in August, whereas average cow prices held relatively steady and close to year-earlier levels most of this period. In August, the average price to farmers for beef cattle at $20.20 per 100 lb. was 60¢ above a year earlier. Cows were up 90¢ and steers and heifers up 40¢.

During late August and early September, slaughter steer prices have held relatively steady. Cow prices declined in early September, but have since recovered most of this loss. Feeder cattle prices have held up well, supported by increased interest in feedlot replacements and cattle to go onto winter pastures.

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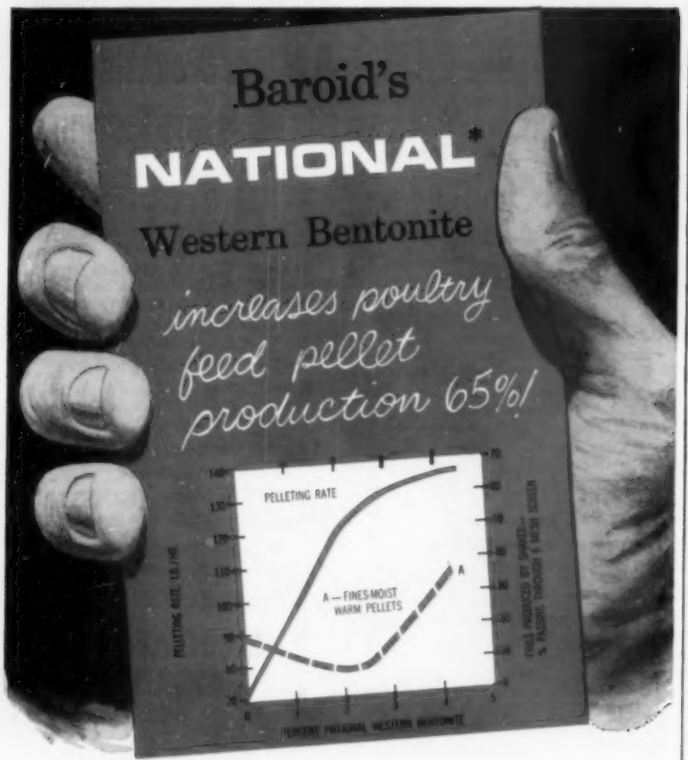
TRADE AGREEMENTS—Shown signing trade agreements are officials of John W. Eshelman & Sons and the Sindicato de la Leche, S.A., Venezuela. From left to right are: Dr. J. Bezara, Sindicato director-manager; John B. Eshelman, vice president of John W. Eshelman & Sons; George Nieto, John W. Eshelman & Sons International Division manager, and Dr. William Larralde, Sindicato nutrition manager.



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Red Rose Feeds Will Be Made in Venezuela

LANCASTER, PA. — Red Rose brand feeds will be manufactured in a foreign nation for the first time as a result of an agreement completed here by officials of John W. Eshelman & Sons and Sindicato de la Leche, S.A., Caracas, Venezuela (Feedstuffs, Oct. 14, page 105).

The Eshelman announcement regarding the agreement says that Sindicato de la Leche, S.A., is one of the largest associations of cattlemen and milk producers in Venezuela and has plants located throughout the country. The association's production facilities at Maracay, Venezuela, are now being expanded to provide for a capacity of 20-30 tons per hour, it was reported.

The Eshelman firm's Red Rose brand feeds currently are exported to 38 countries from plants in the U.S.

Under the agreement, the Venezuelan firm will manufacture the feeds from products raised in Venezuela using Eshelman components and formulae, a company official said. The feeds will be marketed under the Red Rose brand.

J. Bezara, director-manager of the Sindicato, present for the contract signing, said the move was one of "cooperation" whereby Eshelman furnished the "know-how" and his firm and the Venezuelan people benefited by increased nutrition and the added use of Venezuelan crops.

Present for the completion of manufacturing arrangements were, in addition to Mr. Bezara: Dr. William Larralde, Sindicato nutritionist; Dr. Louis Berrizbeitia, Venezuelan consul general; Martinez Isturiz, vice consul, and Waldemar Cordero, secretary director of the Banco Agricola-Pecuario of Venezuela.

Texas Firm's New Research Facility Seen by 2,000 on Tour

WEIMAR, TEXAS — Approximately 2,000 persons toured the new research farm of M-G, Inc., Weimar, recently during the annual barbecue and fun day for distributors of the products of this feed manufacturing and poultry produce firm. The group consisted of owners, employees and the families of the firm's 200 feed distributors as well as similar groups from the two poultry and egg distribution plants of the company in Houston and San Antonio, Texas.

The company's recently acquired research facility has eight poultry houses 40x250 ft., with a capacity of 10,000 birds each. Visitors toured the farm and were shown the various feeding projects which are under way. After dinner and refreshments, two dance bands provided continuous music, and there were ferris wheel and pony rides for the children.

The distributors' party is an annual event, begun originally on a small scale to acquaint store clerks and other employees of the feed stores with the M-G company. At the first party 12 years ago, 187 attended.

The M-G firm was started as a one man operation in 1940 by Marvin Gilbreath, who took over a small produce store and later began mixing feeds. Under the direction of Mr. Gilbreath and F. R. Carroll, who joined the firm when feed production was started, the company has grown to the point where sales amount to many million dollars annually. The operations include a feed manufacturing plant and poultry and egg processing plants at Weimar, and wholesale distribution plants at Houston and San Antonio.

Feed is sold in 23 counties surrounding Weimar, while the poultry and egg divisions sell throughout the U.S. and engage in some export business. The company has 157 employees.

Eli Lilly & Co. Sales For 9 Months Up 10%

INDIANAPOLIS—Estimated sales of Eli Lilly & Co. for the first nine months of 1961 were $148 million, an increase of 10% over the $135.1 million total for the corresponding period last year.

The company announcement said that estimated net income was $17.8 million, compared with earnings of $15.6 million during the first nine months of 1960. Estimated earnings per common share were $2.23; they were $1.95 during the same period in 1960.

Eugene N. Beesley, president of the company, said the parent company and all subsidiaries contributed to the improved operating results. He noted that the third quarter was a particularly good one and produced an estimated 12% increase in sales over the same period last year.

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DRAFT

(Continued from page 1)

cludes all pertinent statements which are complete within themselves and do not depend on reference to the upcoming proposed turkey hatching egg marketing order for completeness and understanding:

MARKETING POLICY—Prior to making its recommendation to the Secretary of Agriculture for regulations limiting or regulating the handling (slaughtering, storing or further processing for meat) of turkeys for any period or periods, the (National Turkey Advisory) Committee shall hold a meeting to formulate and adopt a marketing policy for the marketing of turkeys for such period or periods and shall submit promptly to the Secretary a report setting forth its marketing policy for the regulation of the handling of turkeys in such period or periods. The report shall include the data and information used by the Committee in formulating the marketing policy and the recommendation of the Committee. In developing the marketing policy, the Committee shall give consideration to the following factors:

—The estimated quantity of turkeys held for handlers, for themselves and for the account of the Committee, at the beginning of such period or periods.

—The probable availability of additional turkeys during such period or periods.

—The estimated quantity of turkeys which should be carried over as a desirable inventory into any succeeding period or periods.

—The number of turkey hatching eggs set for hatching or the number of poults placed in such period or periods as will reflect probable availability of turkeys in the period or periods for which regulation is proposed.

—The estimated market requirements for turkeys for the period or periods for which regulation may be proposed, including in such estimates as separate items probable trade demands for turkeys in the various available outlets for turkeys.

—Current prices being received for turkeys and the probable general level of prices to be received for turkeys by producers (any person engaged in commercial turkey production and who has proprietary interest therein) and handlers.

—The trend and level of consumer income and any other factors which may affect consumer demand for turkeys.

—Any other pertinent factors bearing on the marketing of such turkeys, including the estimated supply or demand for particular types of turkeys or special problems relating to particular districts or other regional areas within the production area, and

—The need for any regulations and recommendations with respect thereto dealing in any manner with any of the foregoing or with the authorities for regulation provided by this order.

ISSUANCE OF REGULATION—The Secretary shall limit the handling of turkeys as authorized by this section whenever he finds from the recommendations and information submitted by the Committee, or from other available information, that such regulation may tend to effectuate the declared policy of the act. Such regulations may:

—Limit the handling in specified outlets of particular grades, sizes, qualities or packs of any or all types of turkeys during a specified period or periods.

—Limit the handling of turkeys in specified outlets by establishing in terms of grade, size or quality, minimum standards of quality.

—Fix, or provide methods for fixing . . . free and surplus percentages applicable to the handling of all turkeys handled by handlers and for the pooling of surplus turkeys and the distribution of the proceeds of such pool.

—Limit the handling of turkeys differently for different types, for different districts or other regional areas, for different purposes, or any combination of the foregoing, for any period.

VOLUME REGULATION — Desirable free quantity: If, on the basis of the Committee recommendation or other information, the Secretary concurs in the likely need for volume regulation for turkeys for such period or periods as he may prescribe, he shall establish the desirable free quantity of turkeys which all handlers may freely use or dispose of in such period or periods.

Percentages: Whenever the Committee concludes that the volume of turkeys to be handled in a marketing period, or periods, for which the Secretary has established a desirable free quantity of turkeys will exceed such desirable free quantity and that limiting the volume which handlers may freely use or dispose of in such period or periods through establishing free and surplus percentages applicable to all handlings of turkeys, or handlings of turkeys of any grade, size or quality, or any combination thereof may tend to effectuate the declared policy of the act; it shall make recommendations to the Secretary and the Secretary may establish free and surplus percentages applicable to such total handlings, or of any grade, size, or quality thereof, within such period or periods, which shall total 100% of the turkeys to which the percentages apply. If the Secretary determines that such percentages should be modified within any such period or periods, appropriate new percentages may be established, provided that the applicable surplus percentage may not be increased within any such period.

Setaside: Whenever free and surplus percentages have been established for a period or periods by the Secretary, each handler shall set aside and withhold from marketing a quantity of turkeys computed by multiplying the quantity of all turkeys handled by him in such period by the applicable surplus percentage. The Committee with the approval of the Secretary, may prescribe the grade, size, or quality of turkeys which shall be set aside to meet the surplus percentage. The quantity so set aside shall be free and clear of all liens and shall be held by the handler for the account of the Committee, in storage or otherwise, as directed by the Committee until he has been relieved of such responsibility by the Committee, either by delivery to the Committee or otherwise.

The turkeys handled by a handler which are free quantity turkeys may be disposed of by him in any marketing outlet subject to any grade, size, or quality restrictions otherwise provided by this part.

Setaside surplus turkeys generally:

—All turkeys set aside to meet the handler's surplus setaside obligation shall be held by the handler for the account of the Committee and subject to its direction.

—If so directed by the Committee, the handler shall hold such turkeys in storage, in such facilities and under such storage conditions as the Committee may prescribe and in such manner as to maintain the stored turkeys in good merchantable condition.

—Setaside turkeys shall be held or stored and containers shall be labeled or otherwise marked in such manner as the Committee may prescribe so as to be identifiable at all times and shall be subject to inspection by the Committee or its representatives at all times.

—Upon five-days' notice, a handler shall commence delivery to the Committee or its designee of any or all setaside turkeys held for the account of the Committee and at such rate as may be prescribed.

—Setaside obligations shall be adjusted from time to time to recognize such normal shrinkage or loss as the Committee may determine with the approval of the Secretary.

—Handlers shall use good commercial practices in caring for setaside items and be liable to the Committee for losses of setaside resulting from lack of due care.

Setaside by grade, size, or type: Upon recommendation by the Committee and approval by the Secretary, the quantities to be set aside by handlers may be segregated by grade, size, or type and separate pools may be established for the disposition thereof and the distribution of proceeds.

Equity holders: So that the Committee may determine each producer's or his successor's interest or equity in the total setaside, each handler who sets aside turkeys to meet his surplus percentage shall determine, or cause to be determined, the type, grade, and quantity of turkeys so set aside which were received from each producer thereof, together with the name and address of such producer, or his successor in interest, the place of production, and any other information which the Committee may require to identify all producers of the turkeys so set aside and shall cause such information to be certified to the Committee. The Committee shall keep a record of all such information pertinent to each pool of setaside surplus turkeys to which it may be pertinent.

Handler compensation: Each handler shall be compensated for processing, storing and such other costs relating to the surplus percentage setaside of turkeys as the Committee may deem to be appropriate. In accordance with charges established by the Committee with the approval of the Secretary. Such costs shall be borne initially by the handlers but such handlers shall be compensated from each pool for the cost thereof as soon as funds become available from such pool.

Distribution of net proceeds: The proceeds from the disposition of any pool of setaside surplus shall be distributed, after deduction of any expenses incurred by the Committee for the receiving, handling, holding, or disposition thereof, to the respective producers of such turkeys, or their successors in interest, on the basis of the quantities of their respective contributions to the setaside contained in such pool.

DISPOSITION—

Prohibition: Except as provided in Section ——, setaside surplus turkeys shall not be used or disposed of by any handler.

Disposition by Committee—General. The Committee shall have the power and authority to sell and dispose of any and all setaside surplus turkeys upon the best terms and at the highest prices attainable consistent with the provisions and objectives of this part, including the encouragement of new uses or new geographical outlets for turkeys.

—Non-normal outlets. The Committee may sell or dispose of setaside surplus turkeys in the following non-normal outlets:

(1) By sale for disposition in specified surplus outlets, including, but not limited to export outlets;

(2) By direct sale to any agency of the U.S. government for noncompetitive uses;

(3) By any other means consistent with the provisions of this section and in outlets noncompetitive with those for normal outlets for turkeys.

—Normal outlets. To the extent feasible and consistent with the purposes of this part, the Committee may sell or dispose of setaside surplus turkeys in normal outlets, but only with the approval of the Secretary.

INSPECTION AND CERTIFICATION FOR GRADE OR QUALITY—Whenever, for any period or periods regulations are in effect which require the determination of grade or quality of turkeys, the Secretary, upon recommendation of the Committee, may, by regulation, require each handler to cause such turkeys to be inspected for grade or quality by any agency or agencies which he may designate, and further require that any such agency certify the grade or quality of such turkeys on forms of certificates to be prescribed by the Committee with the approval of the Secretary. The cost of any such services shall be borne by the handler and not by the Committee.

FINANCING

(Continued from page 4)

to protect the customers of hatcheries on as equitable a base as possible, Mr. Blood said. He acknowledged that this could be "very complicated."

Asked whether a quota could become a marketable commodity, Mr. Blood replied that it could be, or that when a hatchery failed to use its quota, it could go back to a "pool" to be reassigned.

Mr. Blood emphasized that his comments at this point were "conjecture" since he was only reporting what he had heard "mostly in National Turkey Federation circles."

Following Mr. Blood's talk, a member of the audience commented that "acceptance of controls would be an admission that we can't do it ourselves. There will be substantial losses this year, and our sales departments can't say that losses have been small when we credit men want to put on the brakes. This coming year we can weed out poorer producers. If we don't succeed in doing this, maybe controls are our only answer."

Mr. Simonsen commented that there is real danger that a move to install a marketing order can become a panic. He added that in the long-range future all agriculture seems destined to be controlled—"by us, by the government or by big companies." And, he added, "I would like to see the industry run itself."

Three Elements

He attributed the large expansion in turkey production this year to three elements: The grower ("he had good earnings in 1959 and 1960, and he wanted to get twice as rich"); over-extension of credit by feed companies, building companies and equipment suppliers, and campaign oratory of the administration ("when producers were wondering if they should expand, the administration was talking big about helping farmers, so many went ahead with expansion thinking the government would bail them out").

Another factor that helped boost production, he said, was some feed salesmen telling customers that controls were coming and they had better establish a larger base.

Another speaker, Lloyd Johnson of the frozen foods division of Super Valu Stores, Inc., Hopkins, Minn., warned that a condition similar to the broiler situation could develop in turkeys unless some voluntary production controls are put into effect.

"Problem Can Be Solved"

Earl Olsen, Farmers Produce Co., Willmar, Minn., declared that "turkey marketing problems can be solved," and he urged that the industry look beyond "the present doom and gloom" to expanding demand for turkeys in the export market and in new ways of processing and preparing them in table-ready form.

He cited the sharp increase in per capita consumption of turkeys and suggested that the industry plan so that it can "look back to 1961 as the year in which we prepared for the future."

Keen interest in the current financing-production situation was indicated by a 50% increase from usual attendance of around 65 to 90. The next meeting of the group is planned for Feb. 23, with Glenn Johnson of Doughboy Industries, Inc., New Richmond, Wis., and Paul Frederick of Hubbard Milling Co., Mankato, Minn., in charge of the program.

The FEED MARKET

PRICE QUOTATIONS, MARKET TRENDS
OF PRINCIPAL INGREDIENTS

NOTE: Quotations on feed ingredients shown in these and adjoining columns are wholesale prices, per ton, bulk, for prompt delivery, unless otherwise noted. They are the latest quotations available from Feedstuffs correspondents and are not necessarily those in effect on date of publication. The prices represent fair average trading values and do not necessarily represent extreme low or high levels at which individual sales might have occurred. A descriptive summary of supply and demand factors prevalent in the feed market appears on page 2.

ALFALFA MEAL

Chicago: Demand strong; trend strong, up 50¢; supply light; dehydrated, 17% protein, 100,000 units vitamin A $50.60.

Buffalo: Demand and supply fair; trend steady; $58.10, sacked, Boston, unchanged.

Seattle: Demand fair; trend firm; supply ample; suncured, 15% protein $40, Seattle, up $1; dehydrated, 150,000 A units $67, Seattle, up $1.

Kansas City: Demand fair; trend steady to stronger; supply ample; 17% dehydrated alfalfa, 100,000 A pellets $45@46, reground pellets $45@47; 18% dehydrated alfalfa, 125,000 A pellets $47@49, reground pellets $46@50; 20% dehydrated alfalfa, 150,000 A pellets $50@54, reground pellets $52@55, up $2.

Portland: Demand for 15% suncured fair, 20% dehydrated pellet meal good; trend of 15% suncured easier, 20% dehydrated steady; supply adequate; 15% suncured $40, sacked; 20% dehydrated pellet meal $69, sacked.

Memphis: Demand fair; trend steady to higher; supply ample; dehydrated, 17% protein, guaranteed 100,000 units vitamin A $52.50, up $1.50; reground pellets $51.60, up $2.

Cincinnati: Demand fair; trend steady; supply adequate; 17% dehydrated, 100,000 vitamin A $48@55, up $1@2.

Boston: Demand steady; trend firmer; supply adequate; dehydrated, 17% $53.50, up $2.50; suncured, 13% $48, sacked, unchanged.

Ft. Worth: Demand fair; trend steady; supply sufficient; sacked: dehydrated, 17%, 100,000 A $53, fall or truck, unchanged; suncured: 13% ¼-in. grind, No. 1 $42, truck, unchanged.

St. Louis: Demand fair; trend easy; supply ample; dehydrated, 17% protein, 100,000 units vitamin A, pellets $48.50, up $2.

Minneapolis: 17% dehydrated, 100,000 units vitamin A reground pellets $50, up $1; oiled reground $51, up $1.

Los Angeles: Demand and trend steady; supply adequate; dehydrated meal, 17% protein, 100,000 A $50@51; dehydrated pellet meal, 17% protein, 100,000 A $52@54; suncured meal, 15% protein $41@42; suncured crumbles, 15% protein $43@44; all unchanged.

ANIMAL FAT (STABILIZED)

Memphis: Demand poor; trend steady; supply ample; yellow grease 5¢ lb.; prime tallow 5¼¢ lb.; both down ⅛¢.

Chicago: Demand good; trend steady; supply fair; bleachable fancy tallow $5.87½ cwt., yellow grease $5.27½ cwt., both in tank truck or carlots.

Ft. Worth: Demand fair; trend steady; supply sufficient; prime tallow, tank cars 5½¢ lb., drums 7@7½¢ lb., f.o.b. north Texas packing plants with returnable drums, up ¼¢.

Boston: Demand fair; trend steady; supply ample; tallow 5½¢ lb., unchanged; yellow grease 5¢ lb., off ¼¢.

St. Louis: Demand fair; trend steady; supply ample; yellow grease 4¾¢ lb., delivered, tank cars or trucks, unchanged.

Atlanta: Demand fair; trend steady; supply ample; 5¢ lb., f.o.b. Alabama and Georgia production points.

St. Paul: Demand good; supply ample; trend firmer on strength of export demand; bleachable fancy up ¼¢ to 5¼¢ lb., f.o.b. producer's plant.

Los Angeles: Demand steady; trend weaker; supply ample; 5½¢ lb., down ⅛¢.

BARLEY FEED

Portland: Demand good; trend higher; supply tight; $49.50.

Baltimore: Demand and supply fair; trend unchanged; $45.50, sacked.

Chicago: Demand and supply fair; trend firm; $55, sacked.

Seattle: Demand good; trend firm; supply fair; $48.50, truck lots, up 50¢.

Boston: Demand and supply light; trend about steady; $45, down 50¢.

Los Angeles: Demand fair; trend steady; supply adequate; $2.60 cwt., unchanged.

BLOOD MEAL

Chicago: Demand fair; trend firm; supply ample; 80% protein $132.50, sacked.

Los Angeles: Demand good; trend firm; supply limited; $5.50@5.75 a unit of ammonia, sacked, unchanged.

BONE MEAL (STEAMED)

Chicago: Demand and supply fair; trend steady; $97.50, sacked, unchanged.

Seattle: Demand fair; trend steady; supply good; $92, f.o.b. car Seattle, sacked, unchanged.

Cincinnati: Demand fair; trend steady; supply good; $95, sacked, Cincinnati, unchanged.

Los Angeles: Demand fair; trend steady; supply adequate; imported $78.50, 20 ton lots, sacked, unchanged.

BREWERS DRIED GRAINS

Chicago: Demand moderate; trend easier; supply ample; 26% protein $36.50@37.50.

Cincinnati: Demand poor; trend steady; supply adequate; $47.50, down $1.

Buffalo: Demand and supply fair; trend lower; $49, Boston, off 50¢.

Ft. Worth: Demand good; trend steady; supply moderate; domestic $100, sacked, f.o.b. Ft. Worth, unchanged.

Buffalo: Demand and trend steady; supply fair; $105, sacked, f.o.b. Buffalo, un-

Ft. Worth: Demand slow; trend steady; supply sufficient; 26% protein $54.50, sacked, October, unchanged.

St. Louis: Demand good; trend firm; supply limited; 26% protein $43.50, up $1.50.

Los Angeles: Demand and trend steady; supply light; $51, unchanged.

BREWERS DRIED YEAST

Seattle: Demand slow; trend steady; supply ample; $12 cwt., sacked.

Cincinnati: 9@10¢ lb., sacked, unchanged.

St. Louis: Demand fair; trend firm; supply ample; 9½@10¢ lb., carlots, sacked; 10½¢ lb., ton lots; 11½¢ lb., less than ton lots.

Chicago: Demand fair; trend steady; supply ample; 9½@10¢ lb., carlots, sacked; 9¾@12½¢ lb., l.c.l.

Buffalo: Demand good; trend higher; supply fair; $9.10 cwt., f.o.b. Buffalo, up 10¢.

Boston: Demand and supply steady; trend steady; 11¢ lb., unchanged.

Los Angeles: Demand good; trend steady; supply adequate; 10¢ lb., 5 ton lots, sacked; 11¢ lb., 1 ton lots, sacked; 12¢ lb., less than ton lots, sacked; all unchanged.

CALCIUM CARBONATE

Chicago: Demand fair; trend steady; supply ample; fine grind, plain, 100 lb. bags $9.54; bulk, in hopper cars $7.54; bulk in boxcars $8.05; granular grind $1 premium.

Minneapolis: Fine grind, 50 lb. bags $13.75; 100 lb. bags $13; bulk, boxcar $11.50; bulk, hopper $11; coarse grind $1 premium, delivered Minneapolis.

Seattle: Demand and trend steady; supply good; $14, ex-warehouse, sacked.

Ft. Worth: Demand normal; trend steady; supply sufficient; $7.50, sacked, f.o.b. north Texas, unchanged.

Cincinnati: Demand fair; trend steady; supply adequate; $7@7.50 cwt., unchanged.

Los Angeles: Demand fair; trend steady; supply adequate; flour $9.85, 20 ton cars, sacked; meal $10.20, 20 ton cars, sacked; both unchanged.

COCONUT OIL MEAL

Seattle: Demand fair; trend steady; supply ample; solvent type $71, f.o.b. car Seattle, sacked, no change.

Portland: Demand dull; supply adequate; trend unchanged; 20% solvent $63.20.

Los Angeles: Demand slow; trend steady; supply adequate; copra cake $63@64, unchanged.

CONDENSED FISH SOLUBLES

Boston: Demand good; trend firm; supply nil; $55, nominal, unchanged.

Los Angeles: Demand fair; trend steady; supply limited; 2½¢ lb., unchanged.

CORN GLUTEN FEED AND MEAL

(All quotations for all cities are bulk basis, sacked basis $6 more)

Minneapolis: Feed $41.70, meal $70.70.
Atlanta: Feed $45.10, meal $74.10.
Birmingham: Feed $42.90, meal $71.90.
Boston: Feed $46.60, meal $75.60.
Chicago: Feed $35, meal $64.
Cleveland: Feed $43, meal $72.
Denver: Feed $45.30, meal $74.30.
Ft. Worth: Feed $45.80, meal $72.80.
Indianapolis: Feed $40.25, meal $69.25.
Kansas City: Feed $35, meal $64.
Louisville: Feed $41.55, meal $70.85.
New York: Feed $46.20, meal $75.20.
Norfolk: Feed $45.60, meal $74.60.
Philadelphia: Feed $45.80, meal $74.80.
St. Louis: Feed $35, meal $64.

CORN OIL MEAL

Seattle: Demand good; trend firm; supply ample; feed $52, car, up $1.

Cincinnati: Demand fair; trend steady; supply adequate; $42, unchanged.

COTTONSEED OIL MEAL

Memphis: Demand fair; trend steady; supply ample; prime 41% protein, old process $53, up $2; new process, 41% protein $52, up $2.

Cincinnati: Demand fair; trend higher; supply adequate; $59, up $2.

Portland: Demand slow; trend higher; supply tight; 41% solvent $68.20.

Kansas City: Demand fair; trend strong; supply ample; 41% solvent process $59.70, up $3; 41% old process $61.20, up $2.50.

Ft. Worth: Demand good; trend steady; supply still tight with some mills; 41% old process $59@60, f.o.b. mills Ft. Worth, unchanged; loose hulls $11@13, down $1; solvent with 2% fat added $58.60, with 1% fat added $57.60, up $1@2.

Buffalo: Demand and supply fair; trend higher; $75.40, sacked, Boston, up 70¢.

Seattle: Demand good; trend steady; supply ample; 41% expeller $68, f.o.b. car Seattle, down $1.

St. Louis: Demand fair; trend easy; supply ample; 41% solvent process $53, Memphis, up $3.

Atlanta: Demand good; trend weaker; supply limited; 41%, f.o.b. producing mills, North Carolina, South Carolina and Georgia $59 unchanged, north Alabama $57, up $2, Mississippi $53.50, down 50¢, Tennessee $54, down $1.

Los Angeles: Demand slow; trend steady; supply ample; $55@56, unchanged.

CURACAO PHOSPHATE

New York: Minimum 14% phosphorus $13.50, sacked, $40.50 bulk, f.o.b. New Orleans, Jacksonville and Philadelphia.

DEFLUORINATED PHOSPHATE

Coronet, Fla.: Minimum phosphorus 18%, minimum calcium 31%, maximum calcium 34%, maximum fluorine .18%; guaranteed uniform analysis; carload $61.25, sacked, 100 lb. multiwall bags, bulk $58.25; truck load $62, sacked, in 100 lb. multiwall bags, bulk $60, f.o.b. Coronet, Fla.

Tupelo, Miss.: Minimum phosphorus 14%, minimum calcium 28%, maximum fluorine .14% $52, f.o.b. Tupelo in 100 lb. multiwall bags, $49 bulk.

Wales, Tenn.: Minimum phosphorus 18%, minimum calcium 33%, maximum 36%, maximum fluorine .18% $66 (or $3.67 per unit of P), f.o.b. Wales in 100 lb. multiwall bags, $3 less in bulk.

Butte, Mont.: Minimum phosphorus 18%, minimum calcium 32%, maximum calcium 36%, minimum fluorine .18% $81 (or $4.5u per unit of P), f.o.b. Butte, 100 lb. multiwall bags; bulk $78; truck lots of less than 10 tons $10 more, bagged or bulk.

Houston: Minimum phosphorus 19%, minimum calcium 32%, maximum calcium 35%, maximum fluorine .19% $69.35 net ton, f.o.b. Houston, 100 lb. multiwall bags; $66.35 bulk ($3.65 per unit of P).

Port Arthur, Texas: Minimum phosphorus 18%, minimum calcium 31%, maximum calcium 34%, maximum fluorine .18%; guaranteed uniform analysis; carload and truck load $65.75, sacked, 100 lb. multiwall bags; bulk $62.75, f.o.b. Port Arthur.

Cincinnati: 18% phosphorus, carlots $74.30, ton lots $84.30; 14% phosphorus, carlots $62.50, ton lots $72.50, Cincinnati, unchanged.

Ft. Worth: Demand good; trend steady; supply adequate; minimum 18% phosphorus, maximum 34% calcium, maximum .18% fluorine $73.45, sacked, unchanged.

DICALCIUM PHOSPHATE

Chicago: Bulk, carlots and truck loads, 18½% phosphate $78 and 21% phosphate $89; packed in 100 lb. papers, 10 tons or more, 18½% phosphate $81 and 21% $92; lesser quantities, 18½% phosphate $91 and 21% $102; above prices per ton, f.o.b. Chicago Heights, Ill., or Nashville, Tenn.

Bonnie, Fla.: Minimum phosphorus 18½%, granular, $81 (or $4.38 unit of P), freight equalized from nearest producing point, carload basis; bulk carloads $3 less; in truck loads of less than 10 tons, $10 more. Western shipments, for delivery at established railroad stations and by truck at regular feed mixing plants: California, Arizona, Nevada and Utah, $99.90; Washington, Oregon, Montana and Idaho, $107.15; bulk carloads $3 less; truck loads less than 10 tons, $10 more.

Columbia, Tenn.: Minimum phosphorus 18.5%, minimum calcium 24% $81, f.o.b. Columbia, in 100 lb. multiwall bags; freight equalized with nearest producing point, carload basis; bulk $3 ton less.

Texas City, Texas: Minimum phosphorus 18.5%, minimum calcium 20%, maximum calcium 23%, maximum fluorine .12%; carload and truck load $75.50, sacked, in 100 lb. multiwall bags, bulk $72.50, f.o.b. Texas City.

Trenton, Mich.: 18½% phosphorus and 23% calcium, bulk boxcar/hopper car $78, bagged $81; 21% phosphorus product production discontinued.

Buffalo: Demand good; trend steady; supply good; $82.90, sacked, Boston, unchanged.

Seattle: Demand good; trend steady; supply limited; $91, ex-dock, Seattle, sacked, unchanged.

Ft. Worth: Demand fair; trend steady; supply adequate; $81.50, sacked, unchanged.

Cincinnati: 18½% phosphorus $88.80, bagged in carloads; $98.70, bagged in ton lots, f.o.b. Cincinnati; $81, f.o.b. production points, unchanged.

Los Angeles: Demand and trend steady; supply adequate; 18½% phosphorus $95.10, sacked, unchanged.

DISTILLERS DRIED GRAINS

Boston: Demand fair; trend steady; supply adequate; $51, unchanged.

Buffalo: Demand fair to good; trend lower; supply good; $51, Boston, off $1.

Cincinnati: Demand fair; trend steady; supply adequate; $48, up $1.

DRIED BEET PULP

Buffalo: Demand and supply fair; trend steady; $53.50, sacked, Boston, unchanged.

Seattle: Demand fair; trend steady; supply ample; $48, delivered carlots, sacked, unchanged.

Portland: Demand good; trend steady; supply adequate; $47.50, sacked.

Ft. Worth: Demand slow; new crop now being offered; plain $55, sacked, October through December, unchanged.

Boston: Demand improved; supply adequate; trend steadier; $54, sacked, up 50¢.

Atlanta: Demand fair; trend steady; supply good; $53.40, sacked, delivered, unchanged.

Los Angeles: Demand and trend steady; supply ample; $47, Los Angeles and milk shed area, unchanged.

DRIED BUTTERMILK

Chicago: Demand fair; trend 25@50¢ up; supply ample; medium acid $10.25@10.50 cwt., sweet cream $10.25@10.50 cwt., both sacked.

Buffalo: Demand fair; trend higher; supply adequate; $10.75 cwt., f.o.b. Buffalo, up 15¢.

Boston: Demand and supply steady; trend steady; 14¢ lb., unchanged.

Los Angeles: Demand steady; trend firm; supply adequate; 14@14¼¢ lb., sacked, unchanged.

DRIED CITRUS PULP

Buffalo: Demand fair; trend steady; supply good; $32.50, sacked, f.o.b. Florida points, unchanged.

Boston: Demand slow; trend easier; supply ample; $30.17, sacked, down $2.33.

Atlanta: Demand fair; trend steady; supply good; pulp $32.50, sacked; meal $27.50@30, sacked; both f.o.b. Florida processing plants, unchanged.

Los Angeles: Demand and trend steady; supply limited; orange pulp $43, lemon pulp $41; both unchanged.

DRIED SKIM MILK

Chicago: Demand improved; trend 50@75¢ up; supply ample; $12.25@12.50 cwt., sacked.

Buffalo: Demand good; trend firmer; supply adequate; spray $11.75 cwt., f.o.b. Buffalo, up 15¢.

Ft. Worth: Demand slow; trend steady; supply sufficient; $16.50 cwt., sacked, unchanged.

Boston: Demand and supply steady; trend firm; 13½¢ lb., unchanged.

Cincinnati: Demand fair; trend steady; supply adequate; 12@13¢ lb., sacked, unchanged.

Minneapolis: Demand good; supplies tight; price steady at $13.25 cwt.

Los Angeles: Demand fair; trend steady; supply adequate; 14¢ lb., less than ton lots, sacked; 13¾¢ lb., ton lots, sacked; both unchanged.

DRIED WHEY

Cincinnati: Demand fair; trend steady; supply adequate; $5.75 cwt., sacked, unchanged.

Boston: Demand and supply steady; trend steady; $4.85 cwt., unchanged.

Chicago: Demand quiet; trend firm; supply fair; $4.75 cwt., sacked.

Seattle: Demand steady; trend easy; supply good; $5.70 cwt., ex-warehouse, l.c.l., unchanged.

Kansas City: Demand fair; trend steady; supply ample; $4.50 cwt., sacked, unchanged.

Ft. Worth: Demand fair; trend steady; supply adequate; standard $4.75, sacked, truck or rail, delivered Ft. Worth; small lots $5.25, f.o.b. warehouse Ft. Worth, unchanged.

Minneapolis: Demand good; supply tight; price unchanged at $4.75 cwt., f.o.b. shipping points.

Los Angeles: Demand fair; trend steady; supply adequate; $5.10 cwt., carloads, sacked; $5.25 cwt., l.c.l., sacked; both unchanged.

FEATHER MEAL (STABILIZED)

Memphis: Demand slow; trend barely steady; supply adequate; 85% meal $78, down $6.

Ft. Worth: Demand fair; trend steady; supply sufficient; exporters taking production of some plants; 85% protein $80@82.50, delivered Ft. Worth, unchanged.

Boston: Demand and supply light; trend firm; $98.50, nominal, unchanged.

Atlanta: Demand good; trend steady; supply short; $83.50, f.o.b. Alabama and Georgia production points, down $1.50.

Los Angeles: Demand good; trend firm; supply adequate; $1 a unit of protein, sacked, unchanged.

FISH MEAL

Chicago: Demand very good, but offerings withdrawn and prices quoted are strictly nominal; trend $1.80@1.90 higher; menhaden, East Coast $118@120, Gulf $118@120; scrap, East Coast $114@116, Gulf $111@115; Canadian herring $1.80@1.90 a unit of protein.

Buffalo: Demand light; trend firm; supply unavailable; 60% protein menhaden $130, f.o.b. Buffalo, unchanged.

Seattle: Demand and supply fair; trend steady; Canadian production $1.85 a unit protein, f.o.b. truck Vancouver, sacked, unchanged.

Portland: Demand fair; trend higher; supply tight; $2 a protein unit, sacked.

Ft. Worth: Demand fair; trend steady; supply sufficient on Peruvian, limited on menhaden; sacked: 65% protein Peruvian $116@118.50, down 50¢; 60% new crop menhaden $121.30@124, unchanged.

Boston: Demand active; trend strong; supply nil; 60% $112, nominal, unchanged, supply adequate; $113.11, up 1¢.

Atlanta: Demand good; trend steady; supply of imported menhaden good; 60% menhaden $115, Atlantic ports, sacked; 65% Peruvian $112, sacked; both unchanged.

Minneapolis: Demand fair; supply tight; Canadian herring steady at $1.85 a unit, spot, f.o.b. West Coast; $1.75 subject to production; 60% West Coast blended steady at $138.

Los Angeles: Demand good; trend weaker; supply adequate; local production, 60% protein $180@185 a unit, down 2½¢.

HOMINY FEED

Buffalo: Demand fair; trend higher; supply fair to poor; $49, Boston, up $2.

Seattle: Demand fair; trend firm; supply limited; $51, delivered carlots, up $1.

Memphis: Demand poor; trend steady; supply ample; white $39.80, unchanged; yellow $39.80, unchanged.

Chicago: Demand good; trend $2 higher; supply fair; $39.

St. Louis: Demand fair; trend firm; supply limited; yellow $40, up $2.

Boston: Demand good; trend firmer; supply adequate; $47.50, up $1.50.

Kansas City: Demand fair; trend strong; supply scarce; yellow hominy $35@35.50, up 50¢.

Cincinnati: Demand fair; trend higher; supply adequate; $41.50, up $3.

Los Angeles: Demand good; trend firm; supply limited; hominy meal $50, hominy pellets $52, both unchanged.

LINSEED OIL MEAL

Portland: Demand dull; supply adequate; trend unchanged; 34% solvent $85.60, sacked.

Buffalo: Demand and supply fair; trend steady to higher; $55, Minneapolis, up 50¢.

Chicago: Demand good; trend firm to 50¢

(Turn to QUOTES, page 124)

Major Markets Roundup

Soy Meal Advance Leads Ingredients Higher

A further advance in the price of sensitive soybean meal led many other ingredients to higher ground in markets across the nation this week.

Advances in the price of soybean meal ranged up to $6 at Cincinnati. Average figures prepared by the U.S. Department of Agriculture indicate a $5 per ton advance for soybean meal in the period Oct. 10 to Oct. 17.

Millfeeds continued strong, with advances of up to $4 chalked up in some of the markets.

Tankage trended firmer on the market, and meat and bone meal ranged from $3 higher to $3 lower

Among the ingredients, only the animal protein feeds category was lower for the week ending Oct. 17 (see index).

East

BOSTON: The local millfeed market displayed a generally firmer price trend last week despite an over-all position of caution among most buyers. Most of the trading activity was confined to spot or nearby requirements with sellers definitely being forced to a more aggressive position than normal if any extended commitments were to be considered.

Soybean meal was the outstanding mover of the week with price changes rather violent. At the close, price advances in that commodity ranged from $3.50 to $6.50 higher.

Other broad gainers were alfalfa meal, middlings, linseed oil meal and hominy feed. On the down side were citrus pulp and meat and bone meal.

BUFFALO: Soybean oil meal continued to snap back, with a whopping $5 rise, as consumers bought heavily into available supplies. The ingredient market, as a whole, was slow, with some prices tending higher because of temporary shortages before harvests.

Animal tallow continued weak on lack of exports and heavy kill. Cottonseed oil meal rose 70¢ and linseed oil meal edged up 50¢. Fish meal was off $2.50, but meat scraps held unchanged.

Brewers' grains edged 50¢ lower and distillers' grains declined $1, but hominy worked up $2, and alfalfa meal held ste

Millfeeds ju.. ed on very tight supplies. One waterfront flour mill remained shut down because of a labor dispute and running time of some of the other mills was curtailed. Bran, middlings and red dog each gained $4.

Midwest

MINNEAPOLIS-ST. PAUL: Advance in the price of sensitive soybean oil meal influenced the ingredient market here, and several ingredients ended up on the higher side.

Soybean meal was up $1.50 to $49. The price of linseed oil meal was up $1.50 to $56. Animal fat advanced ¼¢ from its low price last week of 5½¢ lb., f.o.b. producer's plant, mainly on the strength of export demand.

Alfalfa meal advanced $1 as the dehydrating season came to a close in many areas. Millfeed prices, which have been showing considerable strength lately, advanced another 50¢ to $1. In the screenings, 15% flax screenings declined $2.

Tankage showed a firmer trend with the prices $1 higher to $1 lower, the range being $90 to $92. Meat and bone meal was off $3 to $3.50 to $80 to $82.50.

CINCINNATI: Supplies were adequate to meet the increased volume of business in the feed ingredient market this week.

Soybean oil meal advanced $6. Millfeeds were up $3.50; hominy feed, $3, and tankage, $1.50. Also up were: Cottonseed oil meal, by $2; alfalfa meal and distillers dried grains, $1 to $2; screenings, 25¢, and fish meal, 1¢.

On the lower side were: Brewers dried grains and meat scraps, by $1, and linseed oil meal, 50¢.

ST. LOUIS: Ingredient suppliers called over-all demand good this week, with prices easing off from their best levels.

As a result, buyers usually insisted upon delivery within two weeks and showed little interest in later shipment material. The fact that requests for tracing shipments were more frequent than usual was taken as an indication that formula feed demand had expanded more briskly than anticipated.

Brokers were of the opinion that a further easing in prices would bring on heavier buying, both for immediate and future shipment.

While most ingredients seemed to carry a weak undertone, millfeeds were firm and not overly plentiful. Production was off, and there was no let-up in demand. Hominy feed fell in this category, too. The trade expected supplies to be tight through the balance of the month or at least until there was a good new crop corn movement.

South

ATLANTA: Cotton ginners are hauling cotton seed to the mills and their trucks are hauling meal or hulls on the return trips, with both commodities in short supply.

The harvesting of soybeans in the Mississippi Valley is picking up, but it will be at least another 10 days before soybeans will be moving to the mills in quantity.

Most of the major feed ingredient buyers continue to buy their requirements on an as-needed basis, as many believe there will be a softening of prices in early November. With good supplies and only fair demand, the price of corn remains practically unchanged at $1.10, f.o.b., to $1.25, delivered, depending upon location.

The movement of citrus pulp is beginning to pick up and, just as soon as cold weather arrives, the movement should be good. Prices remain firm at $32.50, f.o.b. Florida producing points.

MEMPHIS: Ingredients were in only fair to poor demand on the Memphis market during the past week. Prices moved in irregular manner.

A feature of the market was an upturn by oilseed meal. Cottonseed oil meal strengthened considerably, primarily on the advance of soybean oil meal. Quoted prices on cottonseed oil meal here were up $3 a ton from two weeks ago. The demand was fair, with most buying for immediate shipment.

Memphis production soybean oil meal was in a fairly tight supply situation. Export orders booked earlier were being loaded out of this market, creating a temporary supply shortage. Soybean oil meal prices advanced, with Decatur, Ill., offerings up $5 to $6 in the past two weeks. The demand was considered poor by traders, with only occasional trades for nearby meal.

Local alfalfa meal producers are winding up the season. Recent dry weather caused some production drop and mills were well sold-up. As production throughout the nation closes, prices are firming up and sellers are firm in their quotes.

The millfeed market was headlined by a sudden gain in bulk middlings the past few days. Bulk middlings were up $2 for the week, while sacked feeds gained less. A fairly good demand developed in the middlings market and as buyers took on supplies, the market moved up steadily.

Feeds: Average Bulk Prices and Index of Weighted Prices*

(Dollars per ton)

	Oct. 17, 1961	Oct. 10, 1961	Change from previous week
OILSEED MEALS			
Prices at prin. mkts.:			
Soybean meal	65.05	60.05	+5.00
Cottonseed meal	58.45	57.05	+1.40
Linseed meal	64.10	62.70	+1.40
Copra cake or meal	58.75	58.75	...
Peanut meal	63.00	63.00	...
Index	82.4	77.5	+4.9
ANIMAL PROTEIN FEEDS			
Prices at prin. mkts.:			
Meat meal	78.80	80.40	—1.60
Tankage	87.25	88.35	—1.10
Fish meal	114.25	115.00	— .75
Index	76.3	77.4	—1.1
GRAIN HIGH-PROTEIN FEEDS			
Prices at prin. mkts.:			
Gluten feed and meal	44.85	44.85	...
Dist. dried grains	48.45	47.95	+ .50
Brewers dried grains	43.10	43.00	+ .10
Index	70.3	70.2	+ .1
WHEAT MILLFEEDS			
Prices at prin. mkts.:			
Bran	38.05	36.70	+1.35
Midds. and shorts	39.20	37.90	+1.30
Index	69.8	67.4	+2.4
OTHER MILLFEEDS			
Prices at prin. mkts.:			
Hominy feed	40.95	39.45	+1.50
Rice bran	32.00	32.00	...
Index	63.7	61.8	+1.9
ALFALFA MEAL			
Prices at prin. mkts.	48.15	47.10	+1.05
Index	92.7	90.7	+2.0
MOLASSES, FEEDING			
Prices at prin. mkts.	27.23	27.23	...
Index	81.0	81.0	...
ALL FEEDSTUFFS			
Index	77.5	74.6	+2.9
FEED GRAINS			
Prices at prin. mkts.:			
Corn	38.70	38.30	+ .40
Oats	44.40	44.00	+ .40
Barley	46.50	45.70	+ .80
Grain sorghums	38.40	38.00	+ .40
Index	63.5	62.9	+ .6

*Base period of index is 1947-49.
Source: USDA.

Southwest

KANSAS CITY: Ingredient prices were nearly all higher for the week with millfeeds leading the pack. Increased cattle feed shipments sparked and improved demand for middlings which advanced $4 to $4.50 for the week. Other wheat feeds were slightly higher for the week but were mostly pulled up by middlings.

Soybean meal held its advance of late last week with spot cars commanding premiums of $2 to $3 over the price of 30 days shipment. Cottonseed meal, meat scraps and tankage all were steady with improved demand.

Cold weather over major alfalfa

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producing areas caused dehydrated alfalfa production to virtually cease. Prices were steady after last week's advance which pulled pellet prices up within $1 of last year's crop high. The higher price levels brought out some future offerings from storage stocks which attracted some buying interest.

FT. WORTH: Most feed ingredients were either unchanged this week or moved within a narrow range.

Millfeeds were the strongest with quotations $1 to $3 higher.

Solvent cottonseed oil meal was up $1 to $2, but the old process was unchanged. Prompt soybean meal was still tight and up $1.60 to $2.60; forward shipment soymeal was unchanged and demand was reported as fair to light.

Meat and bone meal continued to decline, with quotations $2.50 lower than previous week. Reground oatfeed and Peruvian fish meal were each down 50¢.

Feed mills continued to secure most of their grains from government stocks, and grain dealers and brokers found business quite dull.

West

SEATTLE: Soybean oil meal was up another $1 per ton to $75.60 due to the harvest being held up by heavy rains.

Canadian herring meal was in limited supply at $1.85 for prompt. November - December was quoted at $1.80, subject to production. Buyers are waiting and watching.

Dehydrated alfalfa meal strengthened $1 per ton to $67, Seattle. Suncured alfalfa meal also strengthened $1 to $40.

No. 2 yellow corn showed considerable strength this past week and was up $1.50 per ton to $52. Milo, following corn, was up 50¢ to $48.50. The reason for the sudden show of strength, reportedly, was heavy rainfall in the Corn Belt. Barley strengthened 50¢ to $48.50 due to a good export demand. Millrun was up another dollar to $38 bulk.

PORTLAND: Feed ingredient quotations here and at other major Pacific Northwest markets averaged firm to higher this week and reflected increases for soybean, cottonseed and fish meals along with wheat millrun and whole feeding barley.

Trading appeared to be moderately active with a slightly larger volume changing hands in front of a seasonally increased demand. However, trade sources indicated that purchases from most quarters were still on an immediate or prompt shipment basis.

Soybean meal listings closed $2 a ton higher while cottonseed meal price tags were upped mostly $1 a ton from this time last week.

Trading in animal protein feeds was featured by a 5¢ a protein unit gain for fish meal.

Wheat millfeed values were unchanged to $1 a ton higher in front of limited supplies. Whole feed barley values gained $1 a ton.

Other Reports

MOLASSES: World production of industrial molasses in the 1960-61 season rose to 2,989 million gallons compared to 2,767 million gallons in 1959-60, according to the Foreign Agricultural Service of the U.S. Department of Agriculture. World trade in molasses reached a new high in the calendar year of 1960, USDA said.

Estimated total molasses imports of the 25 countries for which import data are available were 722 million gallons. This is more than 75% above the low imports of over 400 million gallons in 1957 and well above the 510 million imported in 1959.

Major 1960 importers, in million gallons, were: U.S., 449; United Kingdom, 81; Japan, 64, and Canada, 22. Major 1960 exporters, in million gallons, were: Cuba, 256; Mexico, 82; Dominican Republic, 66; Philippines, 66; Malaya, 28, and Jamaica, 26.

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QUOTES

(Continued from page 122)

up; supply fair; solvent $55, expeller $59.50, Minneapolis basis.

Seattle: Demand fair; trend steady; none available; 34% protein (Montana) $89, delivered carloads, sacked, unchanged.

Ft. Worth: Demand slow; trend steady; supply moderate; 34% protein, extracted $70.20, October, unchanged.

Boston: Demand fair; trend firmer; supply light; $74, up $2.30.

Cincinnati: Demand poor; trend steady; supply adequate; new process $54.50, old process $59.50, Minneapolis, down 50¢.

Minneapolis: Demand good; supply adequate; trend firm; 34% solvent up $1.50 to $56; 32% expeller $60.50.

Los Angeles: Demand slow; trend steady; supply adequate; local production, 31% protein $71, unchanged.

MEAT AND BONE MEAL

St. Louis: Demand good; trend easy; supply ample; 50% $78, up $3.

Seattle: Demand good; trend steady; supply ample; $1.65 a unit protein, ex-processing plant, sacked, no change.

Chicago: Demand and supply fair; trend $2.50 lower; 50% protein $85, sacked.

Buffalo: Demand quiet; trend steady; supply light; 50% meat scraps $72.50, f.o.b. Buffalo, unchanged.

Portland: Demand fair; trend steady; supply adequate; 50% $81, sacked.

Kansas City: Demand fair; trend steady; supply ample; 50% scraps $77.50@80.

Memphis: Demand slow; trend barely steady; supply adequate; 50% protein $77.50, without billing, down $2.50; 50% protein $81, with rail transit, down $3.

Ft. Worth: Demand good; trend lower; supply sufficient; $75 bulk, $77.50 sacked, f.o.b. Ft. Worth, down $2.50.

Boston: Demand slow; trend easier; supply ample; $1.05 a protein unit, down 5¢; converted 50% $74.50, down $2.50.

Cincinnati: Demand good; trend strong; supply fair; 50% meat and bone scraps $75, Cincinnati, down $1.

St. Paul: Demand fair; supply adequate; trend firmer; price off $3@3.50 to $80@$2.50.

Los Angeles: Demand excellent; trend firm; supply very tight; 50% protein $1.75 a unit, unchanged.

MEXICAN PHOSPHATE

Brownsville, Texas: Mexican natural ground rock; 13% phosphorus $39 sacked, bulk $2 less.

MILLFEED

St. Louis: Demand good; trend firm; supply ample; sacked bran $41.25, up 75¢; shorts $41.75, up $1.75; bulk bran $37, up $3.50; middlings $38, up $3.

Chicago: Demand good; trend very strong, up $2@2.50; supply fair; standard bran $36.50, standard midds. $38, red dog $39.50.

Buffalo: Demand fair to good; trend higher; supply fair; bran $40, up $4; middlings $40.50, up $4; red dog $43, up $4; all prices f.o.b. Buffalo.

Seattle: Demand and supply good; trend firm; $37, delivered common transit points, carlots, up $1.

Portland: Demand slow; trend higher; supply tight; $37.

Kansas City: Demand good; trend stronger; supply scarce; sacked bran $37@37.50, up $1.50; sacked shorts $37@37.50, up $2.50; bulk bran $33.50@34, up $4; bulk shorts $35.50@36, up $4.50; bulk middlings $35@35.50, up $4.

Memphis: Demand fair; trend steady; supply ample; wheat bran $37.80, up $1.50; gray shorts $40.80, up $2.50; standard midds. $38.80, up $2.

Ft. Worth: Demand good; trend firm; offerings light for nearby; bran, bulk $41.50, burlaps $45@45.50; gray shorts, bulk $42.50, burlaps $47; middlings, bulk $42.50, delivered Texas common points; bulk bran up $3, sacked bran up $1@1.50, shorts up $2, middlings up $3.

Boston: Demand improved; trend firmer; supply spotty; bran $44.10, up 50¢; middlings $47.10, up $2.50.

Cincinnati: Demand fair; trend higher; supply adequate; bran $41, middlings $43, up $3.50.

Minneapolis: Demand good; trend higher; sacked bran up 50¢@$1, $37; sacked middlings up 50¢@$1, $36.50; sacked red dog up $1 to $42.

Los Angeles: Standard mill run $43.50@44.50, good demand, slightly easier trend, more plentiful, down 50¢; red bran $49@50, slow demand, considerably firmer trend, adequate supplies, $1.50@2 higher.

MOLASSES

Cincinnati: Demand fair; trend steady; supply adequate; 13⅛¢ gal., New Orleans, down ⅛¢.

Boston: Demand and supply steady; trend steady; 16⅛¢ gal., tank cars, unchanged.

Memphis: Demand fair; trend steady; supply ample; blackstrap 13⅛¢ gal., tank car, f.o.b. New Orleans, unchanged.

Seattle: Demand fair; trend firm; supply good; $25.75, f.o.b. Seattle, tank truck lots, down $2.

Buffalo: Demand fair; trend steady; supply good; 16½¢ gal., f.o.b. Albany, unchanged.

Kansas City: Demand slow; trend weaker; supply ample; 13@13¼¢ gal., New Orleans, unchanged to ¼¢ down.

Ft. Worth: Demand fair; trend steady; supply sufficient; blackstrap 14¢ gal., f.o.b. Houston; truck $30.64, delivered Ft. Worth, seller's market price on date of shipment, unchanged.

St. Louis: Demand slow; trend easy; supply ample; blackstrap 13¼¢ gal., tank cars, New Orleans, down ⅛¢ gal.

Atlanta: Demand good; trend steady; supply short; citrus $20, f.o.b. Florida processing plants, unchanged.

Minneapolis: Prices unchanged at $35 for blackstrap, tank truck, delivered; $31 for beet; $32 for blend.

Los Angeles: Demand good; trend steady; supply ample; $24.50, f.o.b. tank cars; $24.75, f.o.b. tank trucks; both unchanged.

OAT PRODUCTS

Ft. Worth: Demand slow; trend steady; supply sufficient; 10% protein oat millfeed $41, sacked, unchanged; reground $20.80, sacked, down 50¢.

Chicago: Demand good; trend firm to $2 up; supply fair; reground oat feed $12; No. 1 fine ground feeding oatmeal $72; feeding rolled oats $74@78.

Boston: Demand spotty; trend steady; supply irregular; white pulverized $52, sacked; reground oat feed $24.10, sacked, both unchanged.

Buffalo: Demand and supply fair; trend steady; $24.60, sacked, Boston, unchanged.

Seattle: Demand fair; trend steady; supply good; 38 lb. or better $51, delivered truck lots, unchanged.

Kansas City: Demand fair; trend steady to lower; supply ample; oat mill products $13@14, sacked; feeding rolled oats $74@75, sacked; both unchanged.

Cincinnati: Demand poor; trend steady; supply adequate; pulverized white oats $48@51, unchanged.

St. Louis: Demand good; trend firm; supply limited; white pulverized $43, unchanged; reground oat feed $12.50, up $2.

Minneapolis: Demand improved; supplies adequate; sacked feeding rolled steady at $82; sacked feeding oatmeal steady at $66; sacked crimped steady at $62; sacked pulverized steady at $46; sacked oat feed steady at $20.

PEANUT OIL MEAL

Atlanta: Demand fair; trend steady; supply short; 45% $59, f.o.b. Alabama producing mills, unchanged.

Los Angeles: None available.

POULTRY BY-PRODUCTS

Memphis: Demand slow; trend barely steady; supply adequate; 55% meal $81, sacked, down $4.

Ft. Worth: Demand fair; trend steady; supply sufficient; $90@92, sacked, f.o.b. Texas plants, unchanged.

Boston: Demand good; trend steady to firm; supply light; $100, unchanged.

Atlanta: Demand fair; trend steady; supply good; meat meal $72.50, f.o.b. Alabama and Georgia production points, unchanged.

Los Angeles: Demand good; trend firmer; supply adequate; $1.55 a unit of protein, sacked, unchanged.

RICE BY-PRODUCTS

Buffalo: Demand easier; trend steady; supply adequate; $56, f.o.b. Buffalo, unchanged.

Ft. Worth: Demand fair; trend steady; limited offerings standard rice bran, sufficient on solvent; standard rice bran $37, sacked, f.o.b. Houston; solvent rice bran $30.50 bulk, $34.50 sacked, f.o.b. south Texas rice mill, unchanged.

Atlanta: Demand good; trend steady; supply limited; bran $44, sacked, delivered, down 50¢.

Los Angeles: Demand slow; trend firmer; supply very limited; California production, high fat content, bran $53, sacked, $3 higher.

SCREENINGS

Chicago: Demand quiet; trend firm; supply fair; ground grain $30.50; Canadian $23.80.

Buffalo: Demand fair; trend steady; supply adequate; ground, sacked $32.25, New York, lake and rail, unchanged; unground, bulk $27.50, New York, unchanged.

Cincinnati: Demand fair; trend steady; supply adequate; unground grain screenings $18@20, up 25¢.

Minneapolis: Demand improved; supplies ample; unground Canadian steady at $18; domestic lights steady at $3@10; domestic mediums steady at $12@20; domestic heavies steady at $20@28; 15% flax screenings off $2 to $40.

Los Angeles: Demand slow; trend steady; supply adequate; ground barley $35, sacked, unchanged.

SOFT PHOSPHATE
(Sacked, delivered)

Atlanta: $20.25.
Buffalo: $25.50.
Chicago: $24.96.
Cincinnati: $23.64.
Des Moines: $25.42.
Kansas City: $25.07.
Memphis: $22.28.
Minneapolis: $26.12.
Philadelphia: $24.51.
St. Louis: $24.32.

SOYBEAN OIL MEAL

Chicago: Demand good; trend higher, especially on E.T.L.; up $1 on unrestricted and $2.50@3.50 on E.T.L.; supply ample; Decatur basis, 44% protein, unrestricted billing $55 and E.T.L. $51.50; 50% protein, unrestricted billing $61 and E.T.L. $57.50.

Cincinnati: Demand fair; trend higher; supply adequate; $57, Decatur, up $6.

Boston: Demand cautious; trend irregular; supply adequate; 44% $51, up $3.50; 50% $58.50, up $6.50, f.o.b. Decatur.

Portland: Demand slow to fair; trend higher; supply tight; 44% $76.50, 50% $82.10.

Buffalo: Demand fair to good; trend higher; supply fair; $52, Decatur, up $5.

Seattle: Demand fair; trend firm; supply ample; $75.60, delivered carlots, up $1.

Memphis: Demand fair; trend lower; supply ample; prime 44% solvent $58, f.o.b. Memphis, up $1.

Kansas City: Demand fair; trend strong; supply adequate; 44% solvent $53@53.50, Decatur, up $3.

Ft. Worth: Demand good for prompt shipment, fair for forward shipment; trend strong for nearby, uncertain for forward shipment; offerings light for nearby delivery; 44% $64.90, prompt, up $1.60; $62.90, November to December, unchanged; 50% $69.90, prompt, up $2.60; $67.90, November to December, unchanged.

St. Louis: Demand fair; trend easier; supply ample; 44% $57, Decatur basis, up $6.

Minneapolis: Demand good; 44% up $1.50 to $49, Decatur; 50% up $2 to $57; 41% expeller up $1.50 to $56.50.

Atlanta: Demand fair; trend weaker; supply limited; 44% $65.70, delivered, up $4.10.

Los Angeles: Demand fair; trend firmer; supply ample; $77.60, up $3.50.

TANKAGE

Kansas City: Demand fair; trend steady; supply ample; 60% digester $85.

Ft. Worth: Demand fair; trend steady; supply sufficient; 60% digester $90, sacked, Ft. Worth, unchanged.

Cincinnati: Demand good; trend strong; supply short; 60% digester $87.50, Cincinnati, up $1.50.

Chicago: Demand and supply fair; trend firm; 60% protein $95, sacked.

St. Paul: Demand fair; supplies adequate; trend firmer; price range is $1 higher to $1 lower, $90@92.

VEGETABLE AND ANIMAL FAT (HYDROLYZED)

Los Angeles: Demand good; trend steady; supply adequate; 5¾¢ lb., unchanged.

Ft. Worth: Demand good; trend steady; supply sufficient; 5¢ lb., f.o.b. north central Texas, unchanged.

UREA FEED COMPOUND

Woodstock, Tenn.: Minimum 42% nitrogen, 262% protein equivalent; $105 bagged, $99 bulk, delivered in all states east of and including New Mexico, Colorado, Wyoming and Montana.

LaPlatte, Neb., and South Point, Ohio: Minimum 42% nitrogen, 262% protein equivalent $96, f.o.b. bagged; $90, bulk, cars or trucks; freight equalized with nearest producing point.

Pryor, Okla.: Minimum 42% nitrogen, 262% protein equivalent, $95 bagged, $91 bulk, f.o.b. Pryor, freight equalized with nearest producing point; $100 bagged, $96 bulk, delivered in cars or trucks to New Mexico, Colorado, Wyoming and all states to the East.

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BROILER EGGS

(Continued from page 1)

number of broiler-type eggs in incubators Oct. 1 indicate that the U.S. Department of Agriculture's chick production report for October probably will show a reduction from a year earlier.

With the Oct. 1 incubator count in USDA's report for September as the indicator, it's likely that the industry is headed for something new in this year's broiler-type chick hatching history. Pulling reports from all regions together, there were, according to USDA, 7% fewer broiler-type chick eggs in incubators Oct. 1 of this

year than on the same date last year. Counts in all but three regions showed reductions. The exceptions were a no-change position in the east south central states and increases of 28% and 7%, respectively, in the mountain and west south central states. The most substantial reductions were reported from the New England states and the middle Atlantic and east north central regions—all near the 20% mark.

September Hatchings

Now, back to September broiler-type chick hatchings:

USDA says commercial hatcheries turned out 143,540,000 broiler-type chicks in September of this year—a gain of 3% compared with September, 1960. The cumulative output of these chicks January through September totaled 1,676,555,000—up 10% compared with the figure for the same nine months the year before, but down 1% from the cumulative increase listed in USDA's report for August.

Broiler-type chick hatchings were greater in September, 1961, than in September, 1960, in five regions—west north central, east south central, west south central, mountain and Pacific. Reductions were recorded in the other four regions.

Egg-Type Keeps Expanding

While it has been definitely established that broiler-type chick production is being curtailed, commercial hatchings of egg-type chicks are increasing at an accelerated rate.

Egg-type chicks hatched in September came to 22,080,000 — 32% above the relatively light hatch in September, 1960. And, according to egg-type chick eggs in incubators Oct. 1, even greater increases in hatchings can be expected. For the U.S. as a whole, there were 48% more egg-type chicks in incubators Oct. 1 this year than a year earlier, with the east south central and west north central regions showing increases of 125% and 108%, respectively. All other regions showed increases, too, but their advances, for the most part, were within a range of 44-66%. Increases of 4% and 5% were reported in New England and the west south central states, respectively.

CATTLE

(Continued from page 1)

—Number of cattle and calves on feed in the north central states totaled 3,545,000 head—up 14% from the 3,112,000 head on feed Oct. 1 a year earlier. Iowa, the leading state, was up 12%, Nebraska jumped 22%, and Illinois increased 14%. All other states in the region, except Missouri, which was down 1%, were higher than last year. South Dakota, with 28% more cattle on feed than a year earlier, showed the largest increase in this region.

Western States 2% Lower—In the 11 western states, there were 2% fewer cattle and calves on feed during the period—1,678,000 head, compared with 1,712,000 in 1960. California, leading western state, was down 1%, and Colorado, second ranking, declined 13%. Idaho and Wyoming were also lower, down 6% and 31% respectively, from a year earlier. Utah was unchanged. Other states in this region showed increases ranging up to 18% in Washington.

Placements Up 14%, Marketing Up 3%—Cattle and calves placed on feed during July through September this year totaled 3,172,000 head, 14% more than the 2,777,000 head placed during the same period in 1960. Shipments of stocker and feeder cattle into eight Corn Belt states (for which data are available) during July and August this year were up 14% from the same two months last year.

Marketings of fed cattle during July through September amounted to 3,385,000 head, 3% more than a year earlier. Marketings were only slightly higher in the North Central states, but were up 4% in the western states.

Kinds on Feed—In the 26 states, 70% of the cattle and calves on feed Oct. 1 were steers and steer calves, 29% were heifers and heifer calves, and 1% were cows and others. The number of steers and steer calves, at 3,923,000 head, compares with 3,609,000 head one year ago. Heifers and heifer calves totaled 1,595,000 head, up 7% from the 1,492,000 head on feed Oct. 1, 1960.

Time on Feed—Cattle and calves on feed by length of time as a per cent of the Oct. 1, 1961 total were: Under 3 months, 55%; 3-6 months, 23%, and over 6 months, 22%. Comparable percentages from the Oct. 1, 1960 report were 52, 26 and 22 respectively.

Marketing Intentions — Reports from cattle feeders in the 26 states indicate they intend to market 56% of the Oct. 1 inventory, or 3,109,000 head, during October, November and December. If intentions are carried out, the marketing would be 5% above the 2,958,000 head marketed in the fourth quarter of 1960 from the Oct. 1, 1960 number on feed.

RECEIVER

(Continued from page 1)

The broilers are on small farms in Tennessee and Georgia under an arrangement whereby the Simmons Co. furnishes the feed.

Only part of the Simmons bankruptcy petition was filed in a rush to get feed for the chicks immediately. The petition listed all liabilities of the defunct company, and asked 10 additional days to file the remainder of the proceedings. Referee Byron Pope granted five days to complete other parts of the petition.

Clayton Cantrell signed the bankruptcy petition as president of the corporation. It stated that the company was unable to "feed out" these chicks and make them marketable, and asked the court to appoint a trustee to carry out the task.

Unsecured debts of $170,104 and secured debts totaling $93,665 were listed in the liabilities. The petition stated that if the baby chicks were nourished to marketable size they would be an asset, even at low market prices in the broiler industry.

CHEERS

(Continued from page 1)

live supplies becoming shorter at most points. Ready to cook demand was fair to good.

The belief prevailed in trade circles that a 13-14¢ price might be reached by this week end or with the opening of next week's markets.

In some areas, sizes were running slightly larger than buyers wanted.

Concern Expressed

Some concern was expressed in the lobby of the hotel here that growers are switching over to commercial egg production, which could cause an adverse effect on that market come the first of the year, or shortly thereafter. One feed company in Alabama is reportedly switching a large portion of its broiler houses to commercial eggs.

At the opening session of the NBC meeting, Gov. Ross Barnett, Mississippi, commenting on the reports he had that Mississippi producers had lost $6 million in the last six months, announced that he has called a meeting of representatives of the 13 broiler producing states for a session in Jackson Oct. 24. He said he had asked the governors of these states to attend, or at least send representatives.

Eight states have already accepted his invitation, he said.

Gov. Barnett said he had decided to take a hand in the broiler business at the request of poultry interests in Mississippi, and had tried to contact Secretary of Agriculture Orville Freeman by telephone, but found out Mr. Freeman was in Europe. He did, however, reach Assistant Secretary Murphy who agreed to attend the Jackson meeting.

Gov. Barnett said he is interested in seeing the department buy more birds for the school lunchroom program and other uses. He said he has been informed the poultry purchasing program is running behind last year, and he would like to see these purchases increased immediately.

Opinions Vary

One thing was also quite evident at the Jackson meeting. There is no universal opinion as to whether the industry is willing to accept marketing orders. Opinions vary.

There was also considerable speculation as to what will come out of the Cincinnati meeting of industry trade association leaders and broiler men Oct. 24-25 to discuss the market situation.

The NBC meeting here was to announce plans for an all-out effort to increase consumption of chicken for the coming year. Emphasis, officials said, would be to stress to the housewife, particularly the diet-conscious woman, that poultry is the meat she should buy.

HOLDING BAG

(Continued from page 1)

000 in unpaid bills by Jan. 1 because of the depressed turkey market in Colorado.

Mr. Peterson said that a year ago, Colorado growers were receiving about 30¢ lb. for live birds. This year prices are down to 20¢—2-3¢ below actual cost of raising turkeys for most of the state's growers.

Contributing to depressed turkey prices—which are being passed to consumers in low retail prices—is a 10-15% national and local increase in turkey production and a year-long influx in Colorado of southern chickens, Mr. Peterson continued.

Mr. Peterson, who operates one of Colorado's oldest turkey ranches, said retail Denver-area prices ran from 39-45¢ lb. last year. This year they've dropped as low as 29¢ for frozen tom turkeys and 35¢ for hens.

Grower prices inched up about 1¢ recently, he continued, but they had been as low as 17¢ lb. earlier in the year.

"That meant a loss of up to $1 per bird for many raisers," he explained.

Growers are concerned, too, that many Denverites who bought lower-priced turkeys earlier this year may be storing them in freezers for Thanksgiving meals.

"Nobody knows how many were bought and stored," Mr. Peterson said. "If they didn't eat those birds, there may not be the usual seasonal demand before Thanksgiving and Christmas."

There are about 450 commercial turkey growers in Colorado, and they will have produced about 25 million lb. of fowl by the end of this year, the grower concluded.

PURINA

(Continued from page 1)

owned by Mr. Corbett, Oscar Turner and Jack McGowan. The poultry company operates chicken breeder flocks, farms, a hatchery and broiler growing operations. It has 54 employees. The packing company operates a 5,000-per-hour capacity broiler processing plant and has 130 employees.

Operations, management and brand names will be maintained as in the past, according to Mr. Danforth. Terms of the agreement made the acquisition retroactive to Sept. 30, 1961.

Mr. Corbett will headquarter in the Ralston Purina Co.'s general offices in St. Louis and will report to Mr. O'Brien. The department he will head is newly created. He will be responsible for the Ft. Halifax properties and other similar Purina enterprises.

ADDITIVE

(Continued from page 1)

meeting of the Nebraska Livestock Feeders Assn. Dr. Frolik predicted that "a virtual Pandora's box of new chemical feed additives and growth-promoting substances will be opened that will modify cattle feeding practices" in the months ahead.

The greatest progress in the past decade in livestock feeding has resulted from the many new feed additives that have been produced, he commented. But, he warned, while rapid development of such substances as antibiotics, hormones and enzymes has done much to benefit agriculture and the consuming public, it has also spawned a whole new host of problems requiring intensive research to solve.

In looking into the future of beef cattle studies, he noted that studies into improving the efficiency of the cattle rumen in converting roughages into edible meat will constitute an important area of research.

Turning to swine experimentation, he cited three goals set by University of Nebraska animal scientists to be achieved through research:

A 200 lb. hog at 114 days from birth. This coincides with the length of the gestation period for swine, and compares with an average of 145 days now required to reach this weight.

Average backfat of ½ in. over the loin. This compares with an average of about 1.2 in. now.

A loin eye area of 7 sq. in., comparing with the current normal loin area of 4.25 in.

The ag dean reported that of a total of 8,200 acres of land at the Nebraska Ordnance Plant at Mead, soon to be acquired by the University, about 3,195 acres will be devoted to teaching and research programs in beef cattle and sheep. Another 480 acres will be earmarked for pasture management studies, he pointed out.

Schedule Hearings on Oregon Service Fees

PORTLAND, ORE. — Two public hearings have been scheduled for November in Oregon to consider proposed adjustments in some of the service fees entailed in the inspection, grading and weighing operations of the grain division of the Oregon Department of Agriculture.

First of the hearings will be Nov. 1, 2 p.m., at the Portland grain division office, 606 S.E. Ninth Ave. The second is set for Nov. 8, 7:30 p.m., at the Recreation Building, Merrill, Ore.

T. Ralph Harry, grain division chief, says the proposed increases are to keep services of the self-sustaining activity "in the black."

Suggested are: A raise of 60¢ to $3.60 in the hourly labor rate for the straight standby time at Portland; an increase of $1.50 to $3 for protein analysis of a complete lot of export grain, and a $3 fee for the new sedimentation test, and a 2¢ per ton increase to 8¢ for inspecting and weighing export cargoes of 1,500 tons or less, and a 1¢ increase to 5¢ for weight only. Any increases would be effective Jan. 1, 1962, according to plans. Other proposed increases cover other division services.

Copies of the proposed fee schedule are available from the department's Portland grain division headquarters. This is the second presentation this year on proposed changes in this set of fees. No action was taken following the earlier hearing.

Use FEEDSTUFFS Want Ads for RESULTS

Chicks Placed in Principal Broiler Areas

(000's omitted)

Week ending	Maine	Conn.	Penn.	Ind.	Ill.	Mo.	Del.	Md.
August 12	1,190	245	762	851	74	858	1,570	2,263
August 19	1,169	354	794	766	77	838	1,822	2,034
August 26	1,211	294	665	751	69	761	1,539	2,246
September 2	1,182	319	686	693	112	744	1,580	2,085
September 9	1,240	268	736	613	57	787	1,623	1,914
September 16	1,166	256	683	658	74	643	1,518	1,945
September 23	674	269	655	521	72	639	1,407	1,918
September 30	1,126	291	625	478	57	649	1,379	1,937
October 7	1,137	253	644	494	56	573	1,355	1,667
October 14	1,058	219	600	449	46	607	1,259	1,853

Week ending	Va.	W. Va.	N.C.	S.C.	Ga.	Fla.	Ala.	Miss.
August 12	912	396	3,403	473	6,969	204	3,986	2,659
August 19	825	458	3,408	457	6,555	216	3,816	2,525
August 26	905	352	3,313	444	6,055	203	3,725	2,538
September 2	807	340	3,205	380	6,017	243	3,551	2,402
September 9	818	381	3,205	385	6,129	220	3,401	2,225
September 16	817	249	3,130	363	5,834	199	3,343	2,134
September 23	682	369	2,989	345	5,661	216	3,286	2,098
September 30	736	247	3,029	379	5,712	156	3,376	2,156
October 7	739	245	2,979	348	5,325	151	3,388	2,001
October 14	712	273	2,889	345	5,455	157	3,372	1,944

Week ending	Ark.	La.	Texas	Wash.	Oregon	Calif.	Total 22 areas 1961	Total 22 areas 1960
August 12	4,557	453	2,442	360	235	1,151	36,013	31,876
August 19	4,135	433	2,368	310	208	1,191	34,759	30,816
August 26	4,177	403	2,340	351	181	1,091	33,604	30,035
September 2	3,996	378	2,209	298	184	1,098	32,509	29,496
September 9	3,765	381	2,056	269	188	1,081	31,742	29,246
September 16	3,713	368	1,922	225	170	979	30,389	28,624
September 23	3,564	382	1,816	282	141	980	28,966	28,656
September 30	3,616	402	1,782	234	176	1,067	29,610	28,551
October 7	3,579	394	1,666	296	176	1,082	28,548	28,442
October 14	3,468	407	1,632	291	141	1,049	28,246	28,355

Pounds of Turkey In Storage Told

CHICAGO—A total of 185,163,000 pounds of turkey were in storage on Sept. 30, according to inventory figures on classes of turkeys released by the Institute of American Poultry Industries. The figure includes only turkeys held in public warehouses.

The semi-annual report, said Harold M. Williams, president of the Institute, was compiled from figures received from 222 warehouses (compared with 191 last year), members of the National Association of Refrigerated Warehouses, Inc. The reporting warehouses are located in 212 cities in 45 states. An additional 55 warehouses reported no turkeys in storage, compared with 57 last year.

Of the total tonnage reported, 175,834,572 pounds were classified. The unclassified tonnage (9,329,028 lb.) was held in 19 warehouses, compared with 6,697,391 pounds unclassified held in 10 warehouses in the '60 report.

Eviscerated hen turkeys comprised 42.13% of the total classified stocks this year, compared with 47.09% a year ago. Eviscerated tom turkeys totaled 52.08%—up from 48.17% in 1960. Eviscerated broiler-fryer type turkeys were 5.05%—up from 4.41% the previous year. New York dressed hen turkeys, 0.23% (0.13% in 1960) and New York dressed tom turkeys, 0.51% (0.20% in 1960).

"The value of this report," said Mr. Williams, "lies in the percentage figures for the different classes of turkeys, which can be applied to U.S. Department of Agriculture total storage holding for Oct. 1 to provide a fairly close estimate of the national holdings by classes."

Little Hope Seen for Salvage Hen Prices

DES MOINES, IOWA — Egg producers may have to write off salvage hens as a total loss and try to make up the difference by producing high quality eggs, Leonard Eggleton told the Iowa Poultry Assn. convention here. Mr. Eggleton is extension poultry marketing specialist at Iowa State University, Ames.

There is little hope for improvement in the prices for salvage hens —chickens that have finished their laying careers, he said. "As long as turkey and broiler producers continue to put out a high quality product at today's prices, turkeys and broilers will compete with stewing hens."

EFFICACY

(Continued from page 6)

to be confined primarily to the finisher periods.

These are observations made following the conclusion of an experiment designed to evaluate the efficacy of two commercial enzyme preparations, designated for test purposes as E-1 and E-2, as additives to broiler diets varying in fat and unidentified factor content.

"In general, the addition of enzyme supplements had a favorable effect on growth and feed efficiency when fat was not included in the diet," Dr. Camp said. "At the 10% fat level, growth responses were almost entirely eliminated, although there was still some evidence of a favorable effect on feed efficiency from E-2 (a B. subtilis fermentation product having both amylolytic and proteolytic activity).

"It is of interest that E-2 produced better results, with respect to both growth and feed efficiency, when it was fed at the lower level (.025%). It is also of interest that this enzyme, which had high amylolytic activity, was somewhat more effective in improving feed efficiency than in stimulating growth."

Dr. Camp further reported that the use of enzyme E-1 (consisting primarily of bacterial proteases) in the finisher diet only, resulted in even more marked improvements in growth and in a surprisingly large improvement in feed efficiency in the presence of 10% poultry oil. The use of E-2 in the finisher diet produced results similar to those observed when it was used throughout the experiment.

"Enzyme E-1 was particularly effective in stimulating growth in the absence of unidentified factor sources, but required the presence of these factors to permit maximum improvement in feed efficiency," Dr. Camp stated. "The significance of this observation remains to be evaluated."

QUALITY DRIED WHEY AS A SOURCE OF LACTOSE IN YOUNG MAMMAL FEEDS—Dr. Vincent W. Nielson, technical sales director, Midwest Dried Milk Co., Dundee, Ill., reported that it has been established that lactose is the preferred carbohydrate for young animals. Also, it has been shown that high quality dried whey can be used with "excellent results" as a source of lactose, high quality protein, milk minerals and water soluble vitamins.

New applications of whey in feeding, he said, include: Beef cattle rations, particularly in stress feeds; dairy cattle rations, for conditioning or in stress feeds; layer rations, with the possibility of whey having a favorable effect on egg shell quality.

From a practical standpoint, Dr. Nielson said, levels of sweet dried whole whey of up to 50% in calf milk replacers, 20-30% in pig prestarters and 15-20% in pig starters and calf starters are being used by feed manufacturers. This type of dried whey is also finding increased acceptances for use in dog foods and other pet foods, he said.

"'Sweet dried whole whey' has come to be recognized as a specific type of dried whey with superior nutritional and palatability qualities which can make a valuable contribution to the feed industry as a low-cost source of milk nutrients for improving the feeding performance of all types of young mammal formulas," Dr. Nielson said.

ANTIOXIDANTS IN ANIMAL FEEDS—"Use of antioxidants to stabilize fats and other oxidizable feedstuffs has been an accepted practice for many years, but only recently has it been realized that additional antioxidant protection is required when fats are present in feeds or when fats are ingested," Dr. Kenneth H. Maddy, Monsanto Chemical Co., St. Louis, commented. "This has led to the development of specific antioxidants for performance of specific functions."

A "broad spectrum" antioxidant, he said, must be effective in the fat, in the feed and in the body in order to provide complete protection necessary in today's manufactured feeds.

Some of the specific animal nutrition and health applications of certain antioxidants, as noted by Dr. Maddy, include:

—Prevention of encephalomalacia, exudative diathesis and muscular dystrophy in chicks.

—Correction of muscular dystrophy symptoms in lambs.

—Increased retention of liver vitamin A in steers.

—Protection of fats and fatty acids prior to their addition to feeds.

—Broiler growth promotion. "An unexpected effect from feeding Santoquin (ethoxyquin antioxidant) to chickens has been the observed growth improvement," Dr. Maddy noted. "It is postulated that this growth response is due to the prevention of formation of in vivo hydroperoxides that are known to be growth inhibiting. Such peroxides also decrease palatability, the increased growth may also be due to greater diet acceptibility by the bird. A possible analogy is the ability of antibiotics to increase growth through prevention of subclinical diseases."

—Pigmentation. "Antioxidants have been shown to increase pigmentation of the skin of birds and the yolks of eggs," Dr. Maddy said. "This is due to the increased stability of xanthophyll pigments, both invitro and in vivo, and not due to any specific effect of the antioxidant per se."

—Swine feeding. "It has been reported that the fats in cereal grains after grinding rapidly become oxidized and that this oxidation is sufficient to produce muscular degeneration in swine," Dr. Maddy noted. "Since it is known that vitamin E and Santoquin will prevent this disease in swine, this is further evidence that a biologically active antioxidant is needed in swine as well as in rations for other animals."

PRESENT STATUS OF ARSENICALS IN ANIMAL FEEDING—Dr. Max W. Moeller, research division, Dr. Salsbury's Laboratories, Charles City, Iowa, said organic arsenicals have become accepted as useful in many chicken, turkey and swine rations because they increase rate of growth or egg production, improve feed efficiency, control diseases or contribute to the quality of end products.

Dr. Moeller related ways in which arsenicals have been shown to be effective in the feeding of broilers, turkeys, layers and swine:

Broilers—"The compounds 3-nitro-4-hydroxyphenylarsonic acid and arsanilic acid are recommended for growth stimulation and improvement in efficiency of feed utilization . . . 3-nitro-hydroxyphenylarsonic acid and arsenosobenzene have coccidiostatic efficacy against certain species of Eimeria for chickens."

Turkeys—"The compounds 4-nitrophenylarsonic acid and 4-ureidophenylarsonic acid are prophylactic against blackhead in both chickens and turkeys. . . . As in broilers, both 3-nitro-4-hydroxyphenylarsonic acid and arsanilic acid improve rate of growth and efficiency of feed utilization."

Layers—"Arsenosobenzene is recommended as a coccidiostat for laying hens, while 3-nitro-4-hydroxyphenylarsonic acid and arsanilic acid are recommended for improved rate of egg production and efficiency of feed utilization."

Swine—"3-nitro-4-hydroxyphenylarsonic acid and arsanilic acid aid in the prevention of enteritis in swine as well as being important in improving rate of growth and efficiency of feed utilization. . . . These organic arsenicals also have a beneficial effect in overcoming selenium poisoning."

Ruminants—"Arsenicals cannot be fed on a continuous basis to sheep, goats or cattle at the present time."

TRACE MINERAL REQUIREMENTS AND TOLERANCES FOR SWINE—Basic research, Dr. W. M. Beeson, Purdue University, reported, has revealed that swine require calcium, phosphorus, sodium, chlorine, potassium, magnesium, manganese, iron, copper, iodine and zinc in the proper amounts and relations in the diet for maximum performance. In addition, cobalt, fluorine, molybdenum and selenium are probably essential for swine, but clear-cut evidence is lacking.

Dr. Beeson's report was primarily concerned with trace mineral requirements, tolerance levels and toxic levels, which are summarized in Table 1.

PHOSPHORUS REQUIREMENTS OF GROWING TURKEYS—Based on observations made in an experiment designed to investigate the relationship between the inorganic phosphorus of the grower diet and the growth rate and incidence of leg disorder in turkeys 8-23 weeks of age, Dr. J. R. Couch and Dr. M. L. Jones, Texas A&M College, drew these conclusions:

A dietary level of not less than 0.6% inorganic phosphorus appears necessary for optimum growth of male turkeys through the 8-23 week period. The requirement of females appears to be not less than 0.7%, although there were some inconsistencies in the data.

"It is recognized that these levels represent only the maximum requirement during the growing period, and that the late-stage requirements may be appreciably lower," Drs. Couch and Jones said. "Conclusive evidence was not obtained regarding the relationships between dietary phosphorus level of the grower diet and the incidence of leg disorders."

TABLE 1. Requirement, Tolerance and Toxic Levels of Trace Minerals for Swine

Mineral Element	—Requirement*— PPM.	Mg./lb.	—Tolerance Level— PPM.	Mg./lb.	—Toxic Level— PPM.	Mg./lb.
Copper	10.0	4.5	100	45.5	250–500	114–227
Iron‡	100.0	45.0	500	227.0	2000<	909.0
Iodine	0.2	.09	....	....	1000†	454.5
Magnesium	400.0	181.0	....	....	....	....
Manganese	40.0	18.0	55	25.0	500	227.0
Zinc	50.0	23.0	500	227.0	2000	909.0

*Recommendations of National Research Council Committee on Nutrient Requirements of Swine in 1959.
†Toxic level in poultry.
‡Minimum iron requirement for growing pigs—80 ppm.

MARKETS

(Continued from page 2)

gredients. Rather than replenishing inventories, the country trade is trying to figure out just what can be expected in the way of future feed industry demand.

Causing the confusion is the government's having "its fingers in so many different pies." The "pies" include attempts to stimulate foreign sales or donations of soybean meal as an item for human diets and the repercussions from the operations of the feed grain program.

Prices for ingredients have advanced recently, and while this would ordinarily have been an incentive to buy, it has been of no special help on this occasion.

South Central

Business is good in formula feeds, and overtime operations are the rule at most plants. While the majority of the units are on a five day production basis, there are some who are running six days.

Hog feed volume represents the major item in total sales, with pig feed outgo continuing to build up. Cattle feed shipments also are large and add a substantial total to the current outgo, but other rations, including broiler and egg feeds, are moving very well.

Feed men report that they have their regular cattle feed trade well covered for present needs. Most of the cattle feeds now going out are against these bookings.

Soybean harvesting has been pretty well completed in the area, and favorable weather is permitting farmers to get started on corn picking. No hard frosts have occurred; such a frost ordinarily speeds up drying. Reports of high yields are common.

Pacific Northwest

Movement of formula feed rations continued slow this week throughout the principal Oregon, Idaho and Washington dairy, livestock and poultry feeding districts.

Demand for turkey feeds continued to ease off as producers increased the marketing tempo of finished broad breasted birds. Chain store buyers were reported starting to buy volume lots at Portland and Salem to fill anticipated Thanksgiving and Christmas consumer needs.

Portland's erratic live chicken market this week gained 1¢ at the inside of the range for market-ready fryers after holding steady the previous two consecutive weeks.

No. 1 frying chickens are now being quoted at 14 to 19¢ lb.

Slaughter hogs continued their downward trend and closed 25¢ cwt. lower.

Southeast

Formula feed business in the Southeast is improving a little each week. Broiler feed manufacturers' running time is approximately 70% of normal due to the cut-back in placement of chicks.

It is reported that several feed mills are not putting any additional chicks on feed until the market improves and are only feeding the ones which they already have in the hands of growers. Broiler prices improved 1 to 2¢ per pound this week, with sales being made at 11 to 12¢ per pound f.o.b. the farms. Many do not look for very much improvement in prices until after the first of the year.

Dry weather continues to hurt pastures, and dairymen and cattlemen are buying roughages and concentrates for their herds. Many of the large ranchers are beginning their fall fattening programs, causing the demand for proteins to pick up.

Delmarva

The broiler industry here is looking forward to a number of factors bailing it out of trouble.

National egg set and chick placement figures have been cut back to what might appear to be figures more in line with demand. Delmarva hatcheries and growers have cut their production back heavily. Chick placements last week were 7% below the corresponding week a year ago. Settings were 3% below a year earlier.

Broiler feeds should get cheaper now that harvest of corn and soybeans in the area is fully underway. In the past week the price of broiler feed did dip $1 per ton, going at an average of $88.95. The meat-feed ratio was improved. A pound of broiler meat last week would buy 2.9 lb. of feed compared to 2.8 lb. a week earlier.

Another factor in the broiler growers' favor is that eggs going into incubators now will produce broilers after the "turkey season" is over.

Northern California

The formula feed business is continuing along in the same pattern as the past few weeks. Manufacturers report operations on a full five-day basis, with occasional added hours to maintain sufficient supplies. Laying mash seems to dominate the feed business at present.

Turkey feed demand is falling off as more growers "finish" their birds for slaughtering.

Rainfall during the week was adequate to start range feed in parts of the upper Sacramento Valley and northern California counties.

Cattle feeds are rather slow at present, with indications pointing to increased sales next month when supplemental feeding will be quite general.

Improvement in dairy feed demand is expected as the pastures are starting to dry up.

INDEX OF ADVERTISERS

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Abbott Laboratories
A-C-E Supply & Equip. Co.
Agric. Prod. Research Council 11
Agri-Tech
Albumina Supply Co. 124
Allied Mills
Amburgo Company 14
American Cyanamid Co. 50, 51
American Dehydrators Assn.
American Scientific Lab. 48
Anderson Box 20
Anderson, V. D., Co. 46
Arbor Acres Farm
Archer-Daniels-Midland Co., Alfalfa Division 124
Aubrey & Co.

Baker Equipment Eng. Co.
Baker, H. J. & Bro., Inc.
Baroid Chemicals, Inc., Subsidiary of Nat'l Lead Co. 120
Baughman Mfg. Co., Inc.
Baxter, A. E., Engineering Co.
Beardstown Mills 9
Bemis Bro. Bag Co. 103
Berg, Paul
Blatchford Calf Meal Co.
Blomfield-Swanson
Bonded Scale & Mach. Co.
Borden Co. 53
Bowman Feed Prod. 114
Bradley-Barr & Co. 46
Brock Mfg., Inc. 70
Brower Manufacturing Co. 72
Brown's Ledbrest, Inc.
Bryant Engineering Co.
Buhler Corp., The 38
Burlap Council
Burrus Equipment Co. 119
Butler Mfg. Co. 95

C-K Processing Co.
Calcium Carbonate Co. 88
California Pellet Mill Co. 54
Cardinal Scale Mfg. Co.
Carey Salt
Cargill, Inc.
Champion Portable Mill Co.
Chase Bag Co. 69
Checkerboard Grain Co. 123
Chick-Master Incubator Co.
Chore-Boy Mfg. Co. 80
Ciba Pharmaceutical Co. 56, 57
Cleveland Vibrator
Clinton Corn Processing Co.
Clofine, Herbert K.
Clupak, Inc.
Cobb's Pedigreed Chicks, Inc. 28
Columbia Phosphate Co.
Columbia Quarry Co. 58
Columbian Steel Tank
Commercial Solvents Corp. 44, 45
Consolidated Blenders, Inc. 37
Consolidated Quarries Div., The Georgia Marble Co.
Consolidated Water Power & Paper Co. 14
Continental Grain
Continental Sales Co.
Corn Products Sales Co. 84
Credit & Financial Mgrs. Assn.
Custom Millers Supply Co. 96

Daffin Manufacturing Div. 85
Damren Mills, Inc. 89
Darling & Co. 96
Davies, Wm., Co., Inc. 73
Davis Enterprises
Davis, H. C., Sons' Mfg. Co., Inc.
Dawe's Laboratories, Inc. 43
Day, Joseph P., Co.
Day Company, The 83
Daycom, Inc. 14
Dayton Bag & Burlap 86
Deere, John, Chemical 36
De Kalb Agr. Assn., Inc.
Delaware Poultry Lab. 116
Devold, Peder
Diamond Alkali Co. 76
Diamond V Mills, Inc. 81
Distillation Products Industries 91
Distillers Feed Research Council
Doane Feed Products 10
Dodgen Industries 55
Dorn & Mitchell Laboratories
Douglas Chemical Co.
Dow Chemical Co. 108, 109
Duplex Mill & Mfg. Co. 117

Eastland, J. W., & Son Co.
Eastman Chemical Prod., Inc.
Ehrsam, J. B., & Sons Mfg. Co., The
Elanco Products Co. 84, 112
Energy Mfg. Co.
Eriez Mfg. 120
Eschenheimer, Rudy, Co. 84
Eshelman, John W.
Ewing, Ray, Co. 35

Ferret Lab.
Fischbein, Dave, Company
Flavor Corp. of America
Food Mach. & Chem. Corp.
Forster Mfg. Co.
Fox Co. 116
Frontier Chemical 111
Fruen Milling Co.
Fuller Co. 28

General Mill Equipment Co. 119
Gland-O-Lac Co.
Grace, W. R., & Co. 93
Grain Belt Supply Co. 54
Grain Processing Corp. 5
Gump, B. F., Co. 71

Hales & Hunter Co.
Hand, Peter, Foundation 3
Harris Lab.
Harshaw Chem.
Haugen, W. D., Co.
Hayes & Stolz Ind. Mfg. Co.
Heil Co., The
Heisdorf & Nelson Farms, Inc.
Henderson Mfg.
Henke Mfg. Co.
Hess & Clark, Inc. 41
Heterochemical Corp. 19
Hoffmann-La Roche, Inc. 22, 23
Hoffman-Taff, Inc. 94
Hogenson Const. Co. 60
Hogg, N. D., Ltd.
Holt Products 40
Honeggers' & Co. 178
Hooker Chemical 52
Hot Spot Detector
Howes, S., Co., Inc. 20, 21
Hubbell, Charles H.
Huss & Schlieper
Hy-Line Poultry

Ibberson, T. E., & Co. 58
Illinois Soy Products 46
International Minerals & Chemical Corp.
International Salt Co., Inc. 40
Iowa Limestone Co.

Jacobson Machine Works 15
Jersee Co.
Johnson, A. E., & Sons, Inc.

Kansas Soya Prod. Co., Inc. 88
Keen Mfg. 92
Kees & Company 71
Kem Mfg. Co.
Kent Feeds
Keystone Steel & Wire
Kindstrom-Schmoll Co.
Koyker Mfg. Co.
Kraft Bag Corp. 89
Kraft Foods Co. 70

LaBudde Feed & Grain Co. 95
Landers Mach. Co. 113
Land O'Lakes Creameries, Inc.
Lauhoff Grain Co.
Leach Mfg. Co. 100, 101
Limestone Products Corp. of America 56
Linwood Stone Prod.
Loncala Phosphate Co. 86

M-E-C Co.
McCabe Grain Co., Ltd. 80
McLeod, Frank 119
Magnus, Mabee & Reynard
Maney Bros. Mill & Elev. Co. 124
Marion Feed Center
Mayo Shell Corp. 32
Meeck & Co., Inc. 17, 39, 47, 87, 97
Meyer, C. W.
Micro-Tracers, Inc. 21
Mid-Continent Grain Co. 16
Mid-States Construction 92
Midwest Dried Milk Co.
Milbrew Co.
Miller, Mel, & Co., Inc. 85
Miller Publishing Co., The
Minneapolis Sewing Mach.
Monsanto Chemical
Moores Mfg. Co. 74
Morton Chemical Co. 72
Morton Salt Co. 96
Myers-Sherman Co.
Myzon Laboratories 75

Nagel, Herman, Co.
National Alfalfa Dehydrating & Mlg. Co.
National Distillers Products
National Molasses Co.
National Vitamin Prod.
Nationwide Leasing Co. 45
Nellis Feed Co. 44
New Century Co., The
New England By-Prod. Corp.
Nichols, Incorporated 52
Nootbaar, H. V., & Co.
Nopco Chemical Co. 59
North American Trading & Import Co.
Nor-Vell, Inc.

Oakes Mfg.
Olavarria & Co.
Oliver Machine Works
Oyster Shell Co.
Oyster Shell Prod. Co. 104

Pabst Brewing Co.
Pabst Sales 102
Paper, Calmenson & Co. 88
Park, Phillip R., Inc.
Parks, J. P., Inc.
Parrish & Heimbecker 102
Parrish, N. K.
Paxton Processing Co. 119
Pay Way Feed Mills, Inc. 36
Penick, S. B., & Co.
Peterson Breeding Farm 60
Pfizer, Chas., & Co. 25, 27, 29, 31, 33, 77
Phelps Dodge
Pilch's Poultry
Pittsburgh Plate Glass Co. 81
Pless, Joe N., Co.
Pockman, L. A., Mfg. Co.
Pope Testing Lab. 46
Poultry By-Products Assn.
Power Curve Conveyor
Prater Pulverizer Co. 119
Productive Acres Mfg. Co. 11
Products Blending Co.
Professional Feeds Div.
Publicker Industries, Inc. 79

Quaker Oats Co. 105

Ralston Purina Co. 60
Rapids Machinery Co.
Red River Alfalfa Co.
Reilly Tar & Chem. Corp.
Reliance Feed Co.
Reynolds & Co.
Richardson Scale Co. 86
Riley Feed 32
Ripco, Inc. 94
Roskamp Huller Co.
Ross Mach. & Mill Supply 80
Ryde & Co.

St. Regis Paper Co. 49
Salsbury's, Dr., Labs. 61-68
Schenley Distillers, Inc. 16
Schutte Pulverizer Co., Inc.
Scott Paper
Seagram, Joseph E., & Sons, Inc.
Sedberry, J. B. 76
Seedburo Equipment Co. 30
Sheffield Chemical 10
Shelby Mfg.
Shellbuilder Co. 69
Sievert, C. W.
Simonsen Mfg. Co.
Small, The W. J., Co. 124
Smith-Douglass Co., Inc. 12, 13
Soft Phosphate Co. 115
Sohio Chemical Co. 113
Southwest Mill Supply Co. 119
Spencer Kellogg & Sons, Inc.
Sprout, Waldron & Co., Inc. 40
Squibb, E. R.
Stabilized Vitamins 81
Standard Brands, Inc. 11, 89, 119
Sterol Derivatives, Inc.
Sterwin Chemicals Inc. 114
Stivers, T. E., Co.
Sudenga Industries 94
Sunset Feed & Grain Co.
Superior Boiler Works
Superior Feed Co.
Suorbilt Corp.
Swanson, Carroll, Sales Co.
Sweet Mfg.
Swift & Co.

Taste Engineering Co. 7
Thomas Conveyor 36
Thompson-Hayward 38
Tierney-Gerber Roto Vent, Inc. 32
Toledo Scale
Toxite Laboratories 20

Ultra-Life Laboratories, Inc. 92
Union Bag-Camp Paper Corp. 99
Union Special Machine Co.
Universal Hoist Co.
Upjohn Co.

Val-A Co.
Vantress, Chas., Farms, Inc.
Vineland Laboratories, Inc.
Vineland Poultry Lab.
Vitren Corp.
Vy Lactos Laboratories, Inc. 107

W-W Grinder Corporation 84
Warren Douglas 88
Wellens & Co.
Wells, Raloh, & Co. 57
Wenger Mixer Mfg. 24
Wertz Feed Products 24
Western Condensing Co.
Western Yeast Co. 49
West Fargo Mfg. Co.
West Va. Pulp & Paper Co.
White Shell Corp.
Whitmoyer Laboratories, Inc. 74
Wilhoit Laboratory
Wilson & Co. 58
Wilson, R. S., Co.
Wilson Trailer Co.
Wirthmore Feeds

Young, John

Arkansas Egg Co. Tells of Plan for Cellophane Wrapping

LITTLE ROCK — Cellophane-wrapped egg cartons have become a part of the egg marketing program of Arkansas Egg Co., it has been announced by Ted Darragh, president of the firm, and president of the Darragh Co., feed manufacturing firm.

The wrapped eggs will be sold under the "Gold'n Fresh" label and will carry a guarantee of completely fresh condition, Mr. Darragh said.

The Arkansas Egg Co. staff reports that the ordinary egg shell is really not as perfect a protector as it was once believed. They say laboratory tests have indicated that even when eggs are carefully refrigerated, they gradually lose their freshness and flavor because of the loss of moisture and carbon dioxide. The cellophane-wrapping method has been planned to prevent these losses.

The secondary asset is the gas barrier provided by the cellophane, which will keep eggs from picking up foreign tastes between laying houses and kitchen tables, company personnel point out. The egg firm here is so confident that the cellophane-packing plant will prove dependable that the officials have guaranteed replacement of any unsatisfactory carton of eggs.

Heavy Cattle, Poultry Keep Pressure on Beef

FT. COLLINS, COLO. — An abundance of heavy cattle and competition from poultry for the housewives' dollar will keep pressure on the fed cattle market for awhile, according to Kenneth R. Jameson, extension farm management specialist at Colorado State University.

Mr. Jameson said that during a recent visit to the Omaha market, it appeared that more than half the cattle would weigh over 1,200 lb. Colorado cattle feeders indicate they also have many heavy-weight cattle yet to be marketed.

"As long as we have more heavy-weight fed cattle than the market needs, prices will remain under pressure," Mr. Jameson declared.

Heavy marketing of a bumper turkey crop at Thanksgiving will not help fed cattle prices during this period, he continued. Retail prices for dressed turkeys will be below average.

During his recent tour of the Corn Belt, Mr. Jameson found supermarkets advertising broiler chickens, five to a package, at 18¢ lb.

"It will be hard for a family to resist poultry at these prices," he concluded.

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